The Builder.

VOL. LXXXIX.—No. 3269. SEPTEMBER 30, 1905.

ILLUSTRATIONS.

Main Staircase, Mount Melville, St. Andrews.....Mr. Paul Waterhouse, F.R.I.B.A., Architect.
House, No. 95, Sloane-street.....Mr. Ambrose Poynter, Architect.
Details from Old House, Clifford's Inn (two sheets).....Drawn by Mr. John Barbour.

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What is a Garden City?

THE expression "Garden City" has been constantly in our ears for some time back. It is a kind of summary or shorthand expression which implies a great deal, but in a rather vague manner, and may be interpreted in different ways by different people. It may stand for something merely Utopian and impracticable, or for a scheme which is common-sense and practical. Whether one should encourage garden cities, either by moral support or by the more practical operation of sinking one's money in them, would with most people depend a good deal on whether they read into the term the Utopian or the practical signification.

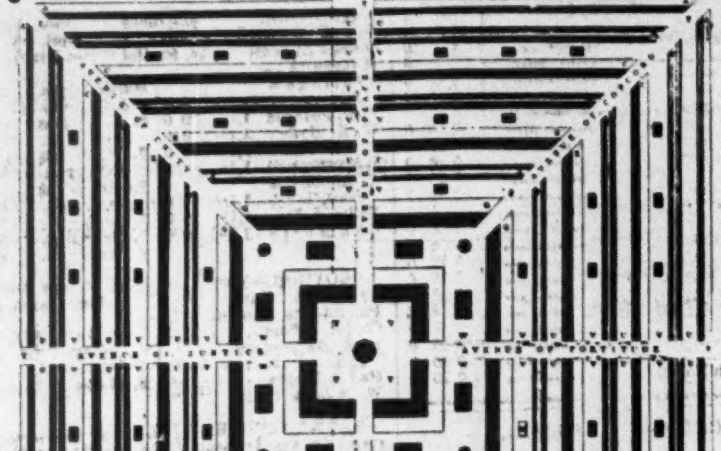
In a broad sense, we take it that a Garden City means a city which is laid out with a view to securing beautiful and hygienic conditions, instead of that of utilising the greatest possible amount of building land for shops, manufactories and residences, and getting the largest possible rent from it. And as it is difficult to imagine the existing cities of crowded streets being metamorphosed into garden cities, the idea seems almost necessarily to include the deliberate making of new cities on a preconceived plan, instead of allowing them to grow up by a mere process of adding house to house and street to street as the demand increases.

The idea of planning and designing a city on a selected site, as one would plan a country house and lay out its grounds, is a fascinating one; but it was more easy of realisation in ancient times, when a city was of comparatively small dimensions and was necessarily confined within the definite limits of a wall of defence. In those days kings or conquerors founded cities for their own glory, and probably in most cases with forced labour. In the present day we have to look for people who will take shares, and to consult the probable tastes of the intended inhabitants as well as the cost of labour and materials: and when all is done, we cannot command tenants at our pleasure. And a too artificial and formal plan will be likely only to please a minority, who may approve in theory of a formally laid-out city, but not of that particular form.

The portentous work in which Mr. A. R. Sennett, a member of the Institution of Civil Engineers, has undertaken to expound the theory and practice of garden cities,* in two volumes each 2½ in. thick and containing together 1,385 pages, seems to be rather pervaded by this mistaken ideal. There is a great deal more, it is true, than that, for the range of the book is immense; the author seems to have aimed at nothing less than providing the maker of cities with suggestions upon every possible subject in connexion with the laying out and working of cities—drainage; method of street alignment; section of roads; means of locomotion; social and municipal economy; industries to be encouraged and provided for, etc. The book is too wide in its scope, in fact, and would have been more likely to be read and studied if its aim had been more concentrated, and also its composition. For in many places what the writer has to say might have been said much more concisely and in much more simple language. There is far too much in it of what is mistakenly supposed to be fine writing, passages of flowery metaphor which would be out of place in a book for a practical purpose even if they had been better, but which in fact are in a very poor and tawdry literary style. It would be waste of space to give examples; but if the author had followed the advice once given to a young preacher—"Strike out every passage you think fine," his book would have been at all events more readable.

Before going into the general consideration of the subject, we may notice one of the practical suggestions made in the introductory part of the book, in regard to the formation and the cleansing of roads. Mr. Sennett is prepared to improve nearly everything in existence according to some new suggestion of his own; those connected with the section of roads are more reasonable than some of the others. He suggests that the time-honoured barrel section of a roadway, for purposes of drainage, is a mistake; that it is making two channels for carrying off rain and detritus where

* "Garden Cities in Theory and Practice." By A. R. Sennett, M.Inst.C.E., etc. London: Bemrose & Sons. 1905.



Buckingham's Square City.

one would suffice; that the section should be the reverse way and should dip towards the centre, with a grid down the middle of the roadway; and he suggests a flushing of the roadway at intervals from continuous pipes under the curb, whence the flushing would descend naturally to the centre grid and thence to the drain, instead of requiring a drain on each side of the road. Like others of the author's suggestions, it is ingenious and perhaps worth consideration. The practical objection is that in all streets that are at all crowded there is constant necessity for vehicles to cross the centre of the road in the give-and-take of driving, and in that case the centre grid might lead to the slipping and falling of horses. The objection would be less were motor vehicles to become universal.

As has been intimated, the idea of a symmetrically laid-out city is the outcome of the author's recommendations, and to the extent to which it is carried here we believe it to be a mistake. But it is of some interest to notice that this idea of the rigidly symmetrical city was that of the man who is said by the author to have been the pioneer of the Garden City idea, J. Silk Buckingham, who in 1849 put forth the ideal plan of a square city which we have reproduced from Mr. Sennett's book, and which is at all events historically interesting. From the long description we learn that the outer row (A) on each side of the square was to contain 1,000 dwellings, 250 on each side; the next line (B) is a continuous covered gallery or arcade 100 ft. wide, one story, with a flat roof to form an open promenade; then come a series of grass lawns, "and in each of these lawns are placed the public edifices, forty-eight in all—of 100 ft. by 50 ft. each, with two stories, completely isolated from connexion with all other buildings, in order to ensure perfect ventilation, with numerous avenues of ingress and egress." We cannot go through all the description of the various zones. The public buildings in the usual sense of the word (for those already so named are only restaurants or such other places as are not private houses), the municipal buildings, museums, churches, etc., are in the grand central square, and in the centre of all a vast octagonal tower to contain an electric light for lighting the whole town. Mr. Buckingham thought it well to give a perspective view, which, together with the plan, rather suggests the celestial city, with all its careful measurements, described in the Book of Revelations. But celestial cities, unfortunately, are not suited for terrestrial occupation or for execution with terrestrial materials. If there were unlimited wealth at command, and one could have buildings all of the finest marble, and streets paved with costly materials, and everything else in keeping, one could imagine that this city might be a fine, even sublime, creation; but far too sublime for ordinary life, and too rigid in its conformation to be adaptable to the varying requirements of an actual population. To fill up the tale of inhabitants, it would be necessary to "compel them to come in"; to find the exact proportion of inhabitants whose means and way of living would suit respectively with each of the classes of buildings provided. It is a mere impracticable vision.

Another projector, a Mr. Howard, appears to have suggested an equally symmetrical circular city, of which also we give the plan, as the two ideas are complementary, the one representing in its extreme form the right-angled ideal, the other the circular ideal. The idea of a circularly planned city, with avenues radiating from the centre, is fascinating in a certain way; but as the author points out, the practical objections to it are very great, notably the inevitable preponderance of awkwardly shaped sites and buildings.

In taking these two plans as representing the square and the circular or segmental elements in street alignment, the author has however something to say which is to the point. In considering the subject generally, he deprecates the employment of streets laid out as segments of a circle in any case, because the eye cannot take in the whole, and they have a closed-in effect. He points out how the Ring-Strasse at Vienna, in spite of its name, is not laid out in a curve, but as a polygon, in a series of straight lines of street making angles at the junction; and he gives a view of Regent's Quadrant (with the old colonnades) by way of illustrating this closed-in effect. Of course in such curved streets there is always the practical objection of the awkward shapes into which the plans of the contiguous houses fall (though this may be met to some extent by refinements in planning); and we quite agree that we should not recommend any predominance of streets laid out on a curve. But Mr. Sennett looks at the matter too entirely from an engineer's point of view, as is illustrated by his reference to York railway station, where (as he rightly says) the curve is a disadvantage because neither passengers nor officials get a complete view of a long train—on the convex of the curve at all events. But he does not seem to realise that what he calls a closed-in effect may constitute a beauty now and again, when well introduced; that perpetual vistas of straight parallel lines are apt to become somewhat monotonous. A crescent is in itself a fine piece of architectural effect, involving certain inconveniences in detail, but nevertheless quite worth introducing occasionally; and the particular instance of Regent's Quadrant is a very good example. As a matter of alignment, it forms a very effective connecting link between two straight vistas of street, and affords a far better effect than if Regent-street had been continued in one straight vista from Waterloo-place to its northern termination.

The result of Mr. Sennett's horror of curves, coupled with his desire for symmetrical laying out, appears to be that his model city would be laid out on what may be called the gridiron plan; so many large parallel avenues in one direction, so many smaller cross avenues at right angles with them. In the details of his scheme there are some clever ideas. The sites for each separate house and garden are divided into a system of hexagons, to avoid useless corners; and they are arranged so that, while preserving outward uniformity, the owner of a house who wants more land than his neighbour may take in a piece of the adjoining hexagon. There are some good ideas about the roads. The author is right in his contention that a very wide road, however dignified it may be in appearance, is a waste of space and of upkeep if it is wider than is necessary for the accommodation of the traffic. He proposes, while preserving a great width between the frontage lines of the gardens, that part of the space of the roadway should be given up to grass or flower-beds, and that there should be on each side of this a roadway only wide enough to take half the normal traffic, each roadway being used for progress in one direction only. There is sense in this, and it is certain that an unnecessarily wide

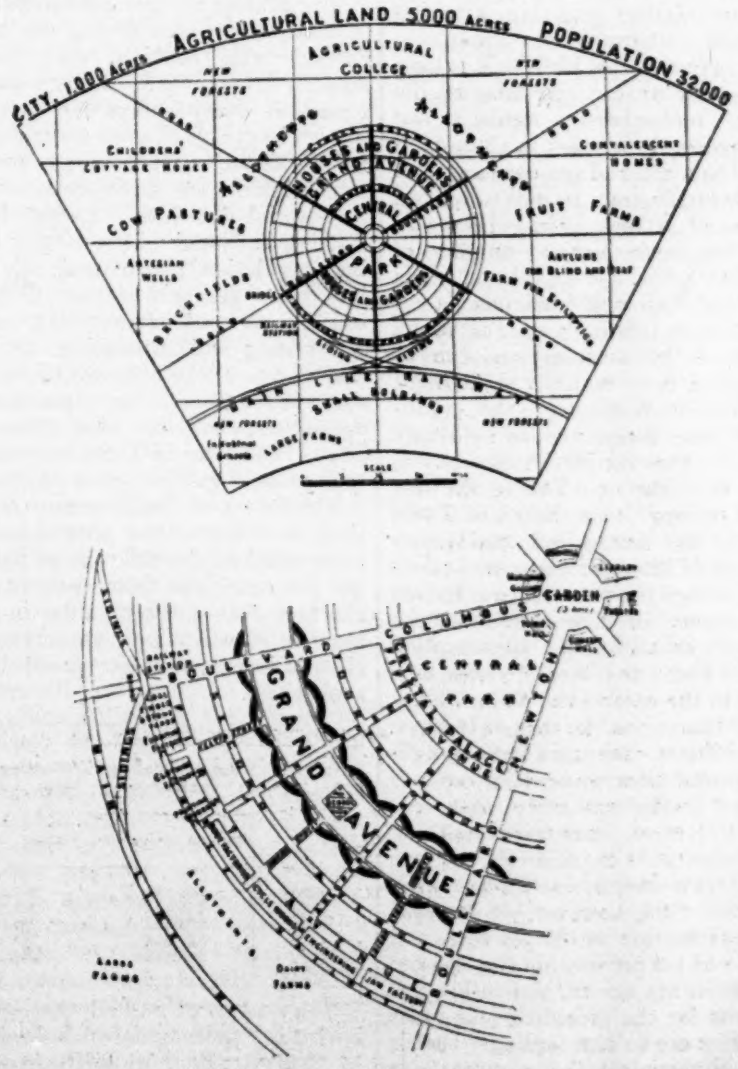
expanse of paved roadway constitutes, as far as it is unused, a kind of desert, and a desert which requires a continual expenditure to keep it in condition. It would be necessary, however, to allow of a cross-over communication for vehicles coming, for instance, along one side of the road—the side properly allotted to them—and having to draw up at a house on the other side; the device is therefore not so simple as it appears at first sight; but it is an idea worth consideration. We are inclined to agree with the author, too, in thinking that the dwellings for the poorer class of residents should be kept in a quarter of their own, and not mingled with those of the richer inhabitants. It has been part of the scheme of some enthusiasts that any artificial distinction between rich and poor quarters should be avoided in an ideal Garden City. Mr. Sennett, who is not troubled with any socialistic doctrines, maintains that this would be disagreeable to the poor as well as to the rich; that the former as well as the latter like to have their own quarters, suited to their own ways of living. We have never heard the direct opinion of a member of the artisan class on this point, but we are inclined to think Mr. Sennett is right. There are other clever and suggestive points in his scheme, which have to be disentangled from a great deal of unnecessary verbiage. But when all allowance is made for these more or less useful suggestions, we are obliged to come to the conclusion that Mr. Sennett's plan of a city is a kind of nightmare of parallelograms. It is the "villa suburb" *in excelsis*. Who would wish to live in a city, however the gardens preponderated over the buildings, divided up into an eternal succession of plots of the same size, and parallel roads going one way crossed by parallel roads at right angles, and all at equal distances? Nothing could be more dull and monotonous.

No: if the task is undertaken of laying out a city deliberately, to constitute what can be rightly called a "Garden City"—a city in which pleasant effect is to be considered as well as the mere provision of so many residences and shops per acre, it will not be on this kind of mechanical system that it will be rendered successful and attractive. People do not want to live in a place cut out mathematically into so many plots of the same size and shape. What is wanted in laying out such a town is the provision of a certain amount of dignity and axial alignment at the most important points of the site—for dignity in city architecture is impossible without axial alignment—coupled with a certain degree of freedom and variety in the subordinate portions. It is a difficult problem; it requires that those who undertake it should perceive where symmetry and axial laying out are required, and where this may be dropped in favour of a less artificial system. Where there are curves they should be geometrical curves; streets laid out in a sinuous line to look picturesque are never a success; they are as bad as the twisting walks which used to be considered the right thing in a garden. The natural character and contour of the ground will suggest something. So far as one can judge from the map appended to the pamphlet, "Garden City in the Making," prepared by the Secretary and issued by the Garden City Press, it would seem that this mania for mechanical symmetry has not possessed the promoters of the City at Letchworth. Only some of the humbler residences (some of which form part of the "Cheap Cottages Exhibition") are at present built, and as far as one can judge by the indications on the plan, there seems to be the intention to keep a kind of division between the humbler and the more important class of houses. In what will evidently be the richer quarter there is a general scheme indicated for a central or nearly central square or *place*, with a wide main avenue to south and north axial with it. The larger run of the main avenue, to the south, turns slightly in line at one place, on what the French call a *rond-point*; and there are diagonal roads running up to the south-east and south-west corners of the central square. The plan as indicated is only, we gather, a first idea, which may be subject to modification. But so far, it seems to show that the promoters have got hold of the right notion of the way to treat the site. They have provided sufficiently for a dignified centre, without showing any indication of intending to parcel out the land on a mechanical system. "It is proposed," we read, "to have considerable variety in the character of the roads, and while the actual roadway will be adapted to the probable volume of traffic, the total width will be increased in many cases by grass margins between the roadway and footway, in which trees will be planted, or by continuous strips of grass or garden between the roadway and the houses." The photographs given of some of the charming country nooks in the neighbourhood of the site indicate that these are valued and that it is desired to keep them unspoiled. If the indications of the plan given are in the main adhered to, we may take it that the central portion of the town would be distinctly urban in character and with a certain architectural dignity, and that the more outlying portions would be left to fall into a certain degree of picturesque variety which would lead them to blend naturally with the unbuilt country around. If that is the idea, it is the right one. Whether this interesting experiment will succeed financially and in other respects is yet to be seen; we are not attempting here to forecast its fate in that respect; but if successful, it seems to promise to realise what we think should be properly implied in the term "A Garden City."

RECENT PROGRESS IN THE USE OF GAS.

By H. F. Hills, Chemist to the Commercial Gas Co., London.

SEVERAL events have of late occurred to reawaken public interest in the possibilities of gas as a source of light, heat, and power. So far as lighting is concerned the matters



Mr. Howard's Circular City.

which have evoked most comment in the popular Press are (1) the decision of the Corporation of the City of London to have the electric arcs removed from Fleet-street, Queen Victoria-street, and some other important City streets, and to erect in their place incandescent gas lamps; (2) the decision of the London County Council to remove the electric standards from Waterloo Bridge, replace the bronze standards which formerly stood on the bridge, and to furnish them with incandescent gas burners; (3) the substitution of gas for electric light at the old Victoria station of the L. B. & S. C. R. Co., and the adoption of gas in preference to electric light in the new station; and (4) the lighting of the new important London thoroughfares, Aldwych and Kingsway, with gas lamps in preference to electric arcs.

In those cases in which gas is taking the place of electricity as a source of light a substantial monetary economy is being effected, and it is stated by the various authorities responsible for the changes that the lighting will not be in any way less efficient. In the case of Victoria station the Chairman of the railway company has expressed great satisfaction both with the lighting as effected by gas and with the large decrease in the cost of the lighting.

Apparently, also, many private consumers, like the public authorities, are dissatisfied with electric lighting, for in the district of one gas company alone (the Gas Light and Coke Co.) over 1,200 electricity consumers have discarded electric light in favour of gas, and on a smaller scale similar reversion is taking place in many other districts.

While, however, the Welsbach system of lighting has given a new lease of life to gas as an illuminating agent, it has acted prejudicially against the gas companies in the matter of gas consumption. Sir George Livesey recently quoted 37 per cent. as the average decrease in gas consumption in a number of cases where a change had been made from gas lighting with luminous flames to incandescent lighting; and, although the decrease in consumption due to the change is very variable in different cases, the introduction of the incandescent burner always results in a very substantial reduction in the quantity of gas used for lighting. Taking the last published returns of the Board of Trade relating to the authorised gas undertakings of the United Kingdom, and calculating therefrom the percentage increases in the number of consumers and the percentage increases in gas consumption during the last five recorded years, it is seen that in the case of the undertakings owned by companies the rate of increase in the number of consumers has throughout this period always exceeded the rate of increase in the quantity of gas consumed. For three years the same thing is observable in the case of the gas undertakings owned by local authorities. In the year 1903, however, an increase in gas consumption of 3·5 per cent. and a decrease of 1·2 per cent. in the number of consumers are shown, and in view of the returns for the preceding four years these figures are so extraordinary that it appears as though an error must have been made in the returns.

BRITISH GAS UNDERTAKINGS (COMPANIES).

Year.	Thousands of Cubic Feet of Gas Sold.	Number of Consumers.	Percentage Increase in Gas Sold.	Percentage Increase in Number of Consumers.
1898	80,077,717	1,670,847	—	—
1899	84,752,031	1,817,649	5·8	8·7
1900	87,687,174	1,945,825	3·4	7·0
1901	89,685,208	2,048,359	2·2	5·2
1902	91,956,324	2,197,987	2·5	7·3
1903	93,923,290	2,385,348	2·1	8·5
Increase in five years ..			16·0	36·7

BRITISH GAS UNDERTAKINGS (LOCAL AUTHORITIES).

Year.	Thousands of Cubic Feet of Gas Consumed.	Number of Consumers.	Percentage Increase in Gas Consumed.	Percentage Increase in Number of Consumers.
1898	47,287,360	1,578,291	—	—
1899	50,969,666	1,667,908	7·7	5·6
1900	52,731,280	1,767,464	3·4	5·9
1901	54,373,348	1,872,633	3·1	5·9
1902	55,776,269	1,970,738	2·5	5·2
1903	57,754,494	1,945,777	3·5	−1·2
Increase in five years ..			20·2	21·4

NUMBER OF BRITISH GAS UNDERTAKINGS.

Year.	Owned by Companies.	Owned by Local Authorities.
1898	439	2·2
1903	459	260

The fact that the number of consumers is increasing at a more rapid rate than the increase in the gas output is due partly to the substitution of incandescent burners for flat flame burners, and partly to the rapidly increasing proportion of working-class consumers, who mostly consume comparatively small quantities of gas.

Fortunately for the gas companies the volume of gas used during the hours of daylight (for cooking, etc.) has been steadily increasing for many years past; otherwise many companies which have always been able to show a slight increase in the annual output of gas would for some time past have been recording substantial decreases. Except in those districts favoured with a largely increasing population the annual sale of gas has been prevented from diminishing only by gas vendors resorting to energetic advertising and canvassing, to the extensive use of the hire and hire-purchase systems for the letting of gas-consuming appliances, and by the allowance of liberal discounts to those who use large quantities of gas for power purposes.

The Board of Trade returns also show that, contrary to the general belief, the total number of public lamps lighted by gas has continued to increase in spite of the fact that gas companies in a great number of cases have to compete with electrical undertakings owned by local authorities.

PUBLIC LAMPS LIGHTED BY GAS.

Year.	Gas Supplied by Companies.	Gas Supplied by Local Authorities.
	Number of Lamps	Number of Lamps.
1899	324,166	257,040
1900	326,813	276,343
1901	326,209	287,887
1902	333,308	294,828
1903	335,363	301,308

The success of gas for the lighting of important thoroughfares is largely due to the introduction of the method of supplying gas to the burners under a higher pressure than that at which it issues from the street mains. By this method the temperature of the gas flame is increased (owing to a larger quantity of gas being consumed in a flame of fixed dimensions) and an efficiency of about 30-candle-power for every cubic foot of gas consumed per hour is obtained. Instead of increasing the pressure of the gas flowing to the burner, the same increase in flame temperature may be obtained by supplying compressed air to the burner and using gas under ordinary supply pressures. In either case the flame temperature is increased by the adoption of the blow-pipe principle.

Except, perhaps, in a very few congested areas where ground space is valuable and a large number of small power users are grouped together, as in the case of the printers in the neighbourhood of Fleet-street, gas has more than held its ground against electricity as a source of power, and gas engines are fast displacing steam boilers and engines in most of our large towns. A more formidable rival to town gas than electricity has appeared in the form of what are known as suction gas plants. Although the gas made in these plants is of extremely poor quality as compared with town gas, and is variable in its composition, it can be manufactured very cheaply where suitable fuel is available at a low price. Anthracite is the fuel most commonly recommended for use in suction gas plants, but in many manufacturing districts anthracite is comparatively costly, and in some cases the trouble of attending to the generator and getting rid of the foul liquor from the washing apparatus is an objection to the installation of a suction gas plant. In some districts where coke is cheap suction plants have been successfully worked with this fuel, but up to the present suction gas plants do not appear, generally speaking, to have prejudicially affected the supply of town gas for power purposes to any material extent.

In the manufacturing districts in the North of England producer gas made in pressure plants (*e.g.*, Mond gas, Dowson gas) is being extensively manufactured and used in the large factories, but in these cases the producer gas is taking the place of solid smoke-emitting fuel, and has very little influence upon the output of gas from the authorised gas undertakings of the Kingdom. The distribution of producer gas on a large scale from central stations has not yet sufficiently progressed to enable a reliable estimate to be made of the practical value of the various big schemes for the distribution of producer gas for power purposes only.

Whether the gas used is producer gas, water gas, or coal gas, those who are hoping that pollution of the atmosphere with smoke by either manufacturers or householders will soon be made illegal cannot but regard with satisfaction the great progress which has been made throughout the country in the voluntary substitution of smokeless gaseous fuel for bituminous smoke-emitting coal.

CONGREGATIONAL CHURCH, CROOKES.—A new Congregational church is to be erected at Crookes on a site at the junction of Upper Springvale-road and Western-road. The building, which will involve an outlay of 5,500*l.*, has been designed by Mr. W. J. Hale, architect.

NOTES.

Workmen's Compensation.

A NOVEL contention under the Workmen's Compensation Act was set up in the Carnarvon County Court last week. Five years ago a workman engaged in the Dinorwic Slate Quarries met with an accident by which he lost his sight, when he was awarded full compensation, half his wages, 10s. 5d. a week. The man is now seventy-three years of age, and an application was made to reduce the weekly payment on the ground that by reason of his age the man's earning power was lessened. The application was dismissed, but it was stated that there were no precedents governing the case. The case of James *v.* Ocean Coal Company, which we commented upon in our issue of May 28, 1904, is to some extent a precedent, in which it was attempted to reduce a workman's compensation on the ground that the percentages allowed in his old employment had dropped since the accident; but the Court of Appeal held that the amount of weekly payments when once determined was not subject to fluctuation. It will be remembered that the Bill to amend the Workmen's Compensation Acts contains provisions enabling men over sixty years of age to be employed under special contract at a lower rate of compensation; but it would be manifestly inequitable that a workman who, by reason of an accident, has been prevented from earning wages which would enable him to put by a provision for himself, should find the compensation paid him, and which never exceeds half his earned wages, diminish by effluxion of time, at the time when he most needed support.

Sheffield and Steel.

CONSIDERING the close connexion between Sheffield and steel it is very appropriate that the meeting of the Iron and Steel Institute, inaugurated on Tuesday, should be held in that city, the only wonder being that this should be the first occasion for which Sheffield has been selected as the place of meeting. The Sheffield University is the only institution of the kind in this country where metallurgy is recognised as a science, a development for which much credit must be given to Professor Arnold. There can be no doubt that this policy is wise, especially when it is remembered that far too many of the most important technical positions in the mining centres of British possessions are now occupied by Americans. Apart, however, from the scientific study of metallurgy, Sheffield continues to maintain the prominent position it has always occupied in the industrial practice of that science, and at the present time probably employs more men than any other city of the world in the production and working of steel. In Mr. R. A. Hadfield, the president for this year, we have a worthy member of that band of pioneers which has done so much for the development of the steel industry. In his opening address Mr. Hadfield recalled the association of Sheffield with the metallurgical products from the days of Chaucer downwards. The valuable work of Huntsman in the XVIIIth century is well known, and it is worthy of note that the practical development of the Bessemer process was carried out by Sheffield men. The first steel rails were produced by Sir John Brown at the Atlas Works in 1861, and, as Mr. Hadfield remarked, "Sheffield might be rightly said to have taught America how to make steel rails used in those lines of communication that had entirely altered the whole face of the vast Transatlantic continent." It is right to remember also that Sheffield played an important part in the perfection of the Siemens process of steel production, and that nearly fifty years ago Dr. Sorby there initiated the microscopic examination of metals, a method to which we owe much of the knowledge that has been obtained as to the structure of steel, and which is still being applied with the most useful results.

The Metropolitan Railway Chimney.

SINCE the publication of Mr. Caröe's letter in the *Times*, a fair share of attention has been attracted to the intolerable nuisance caused by the chimney shaft of the Metropolitan Railway Power Station. But we do not gather that the Willesden District Council have as yet made up their minds to institute vigorous measures with the object of compelling the company to consume their fuel properly, instead of distributing finely-divided carbon over the whole countryside. In a well-designed boiler plant it is perfectly easy to insure the smokeless combustion of the most bituminous coal. The question is simply one of finance. If boilers have not been provided with suitable furnaces and smoke prevention apparatus, and if coal can be procured at low cost, industrial companies often prefer to pay an occasional fine rather than to incur capital expenditure. Repeated fines and the probability of proceedings in the High Court generally lead to reform, and we have no doubt this would be the result at Neasden, if the local authorities could be persuaded to take the matter up in earnest.

Anti-dust Trials.

A MOVE in the right direction has certainly been made by the Automobile Club in conducting trials intended to show the relative dust-raising powers of different types of motor-car. The dust nuisance has always been with us, although accentuated since the advent of automobilism. Consequently it is the duty of highway authorities to adopt improved methods of road construction, and of those interested in the design of mechanically-propelled road vehicles to do what they can to avoid the unnecessary raising of dust. The recent trials near Maidenhead showed that one or two cars behaved in a fairly reasonable manner, thus indicating the bearing of design upon the dust problem. Pneumatic tyres are undoubtedly responsible for a large proportion of the dust raised directly by the suction exercised upon the road surface, and indirectly by tending to limit the diameter of wheels, thereby bringing the carriage body nearer to the road and increasing the power of a second cause of suction. Higher cars with solid-tyred spring wheels should be beneficial in two ways, by reducing dust production and by making excessive speed more dangerous to those who offend in that direction.

Electric Postal Service.

THE delivery of letters, etc., by pneumatic tubes in cities has suggested to several engineers the feasibility of sending letters and parcels between towns in the country by means of miniature railways worked electrically. In France, the *Société des Chemins-de-fer Electro-Postaux* have just completed a successful series of tests on an experimental line they have constructed. The line was constructed for a speed of 150 miles an hour, and so, many difficulties had to be overcome. It is a single rail system, but there are guide rails over the motor vehicle. When the curve on the line has a radius of 500 yds. it was found that the vehicle had to be tilted to an angle of 45 degs with the vertical to prevent excessive wearing away of the rail at the high speeds. The vehicle is about 7 yds. long and is divided into five compartments. The two end compartments contain the oiling and "braking" appliances. Those adjacent to them contain the motors, and the central compartment can carry nearly half a ton of parcels. The track runs under wooden beams fixed into the ground and forming a series of inverted V's, so that it practically runs in a tunnel. It was found that a parabolic shape to the prow of the vehicle gave the best results. Three-phase currents were used, the currents being led to the motors by means of six bow trolleys, three at one end and three at the other end of the car. It was found that it took five minutes to acquire its normal speed of 150 miles an hour, and it required an equal interval of time to slow down to rest. Experiments are being carried out to see whether it could be brought to rest more quickly by using vanes to increase the air resistance when "braking." The vanes are to be worked by a cylinder of compressed air. A full account of the tests of the experimental line, with photographs of the track and motor vehicle, is given in *l'Industrie Électrique* for August 25, 1905. It is stated that it is feasible to maintain a regular transport service at 150 miles an hour.

The New Waterworks, Edinburgh.

FOR the last ten years the Edinburgh Water Trustees have been engaged in the construction of a large new reservoir and other works for the purpose of increasing the water supply of the city. These important works, which have a capacity of 25 million gallons daily, have this week been brought into practical operation. The reservoir is formed by an embankment 1,300 ft. long by 90 ft. high, stretching across the Talla valley, and has a length of more than 2 miles, a water area of about 295 acres, and a storage capacity of nearly 3,000 million gallons of water. The foundation is on solid rock into which the central puddle wall of the embankment is sunk to a maximum depth of 60 ft. This wall has a thickness of 40 ft. at ground level, tapering to 14 ft. at the bottom and to 10 ft. at the top, the width of the dam being 600 ft. at the base and 20 ft. at the top. Ample provision for flood water has been made by the construction of a masonry waste weir 200 ft. long, and the total length of the aqueduct is upwards of 35 miles. To give an idea of the temporary works required in

connexion with this undertaking we may mention that a temporary tunnel 400 yds. long had to be driven through solid rock to carry away the river water during the construction of the embankment, and that the economical transport of material involved the construction of a railway 9 miles long from Broughton to the site. As the catchment area of the Talla valley covers some 10 square miles, it is tolerably certain that the new works should definitely settle the question of water supply for Edinburgh for the ensuing generation at least.

Statues in the Strand.

We recollect being surprised, at the time, at the unexpected interest which one of our most eminent sculptors displayed some months ago in regard to the alignment of the north side of the Strand, and the necessity of bringing the axis of the street central with that of the line between the two churches. It is not usual to find sculptors going out of their way to take so active a part in a purely architectural question. Perhaps the fact that Mr. Thornycroft's statue of Mr. Gladstone is shortly to be unveiled at the east end of Aldwych and in close proximity to St. Clement Danes, may afford some explanation for this anxiety on the part of the sculptor to widen the vista of the street; a wish with which we were entirely in sympathy were it not that the cost of the land to be given away for the purpose seemed disproportionate, at all events from the ratepayers' point of view, which must not be entirely despised: There is now talk of a statue of Dr. Johnson to be placed somewhere in the Strand—but where? Its most suitable position would be some little way eastward of St. Clement Danes', nearly opposite the Court in which Johnson for a long time lived; but there is the Griffin in the way. We hope however that Johnson's memory will be honoured by a monument, including an effigy of some kind; he was a greater man than Gladstone; but the nature of the monument should be carefully considered. It may be a question whether it is desirable to perpetuate in sculpture his awkward and very unsculpturesque figure. A portrait bust, with some suitable symbolical surroundings, would seem a more promising scheme from the artist's point of view. Realistic portrait sculpture of full length figures, in their habit as they lived, is not the best application of the art of sculpture. In case of either bust or figure being adopted, however, no better inscription could be found than that which Beauclerk placed beneath the portrait of his distinguished friend:—"Ingenium ingens inculto sub hoc corpore latet."

Pictures and Decorative Art.

In his paper read at the meeting of the "Association of Master House-Painters and Decorators" at Plymouth, Mr. G. C. Haité complained with reason of the way in which the Royal Academy had practically ignored decorative art in their exhibitions as well as in their curriculum—they having on their teaching staff professors of painting, sculpture, architecture, anatomy, and chemistry, but no professor of decorative design; and it is only recently that even a few articles of decorative work or jewellery have been allowed to find place in their annual exhibitions. And we know that a late eminent President of the Academy, Lord Leighton, had strong feelings on this subject himself, and used his influence as far as possible in favour of a greater attention to decorative art, even making it a special feature (with great success) at one of the winter Loan Exhibitions. So far we are quite with Mr. Haité. But when he implies that decoration is an art on the same level as the painting of pictures or the production of ideal sculpture, he goes too far. Whistler's theory that a picture was only a pattern implies a very restricted view of the art of painting. It is to be a "pattern" in the first instance, no doubt—that is to say, it must have decorative value in line and colour; but painting or sculpture of the highest class is something more than that; it appeals, or may appeal, to the intellect in a way in which no mere decorative scheme can. No one will ever persuade us that Titian's "Bacchus and Ariadne" is not something with an intellectual interest far higher than any decorative design can lay claim to. Painting is not only decoration; it is a great intellectual art; the world has long ago made up its mind on that, and is not likely to alter it.

NOTES AT ANTWERP.

It is said that Antwerp owes her origin to a fortified castle built on a piece of projecting land on the right bank of the Schelde at a point near the present museum of antiquities, which intersects the quays. This castle was the "Burgh." The actual date of its construction is uncertain, though it is generally supposed that it was built some time during the VIIth century. This would make it about 200 years older than a similar edifice built by Baldwin I. at Bruges. Of the earlier history of the town little is known. Apparently the land in the vicinity of the burgh belonged to successive Dukes of Brabant. In the XIIIth century, however, documents of a more or less municipal nature, some of them so humorous as to court disbelief in their authenticity, began to be preserved, and many are now to be found in the city records. Some of these documents concerned the various agreements entered into between the dukes and the people, these latter, it may be supposed, having year by year become less servile and more desirous of obtaining the rights and privileges of citizenship. From servants they became tenants, from tenants they gradually metamorphosed themselves into townsfolk. And in the course of these changes there were, as might have been expected, many quarrels. The dukes, like so many of their class both before and after their time, were jealous of what they considered their rights as "lord of the manor." But such privileges as the use of certain gates, the various rights of way, and the like, were keenly contended for by the people, and the results of their wranglings are set forth with some considerable minuteness. There are, too, existing documents which show that the Burgh underwent several restorations, notably in 1415, and again in 1549, when it is interesting to note that whilst the alterations were being carried out it was stipulated that the banner of Charles V., who inherited the Netherlands before he became Emperor, and was himself a native of Ghent, should be hoisted for ever on its towers.

Near to the burgh, which no longer leaves traces of any importance, there was erected at a very early date a stone building called s' Heeren Steen (the residence of the lord). This as early as the XIIIth century was used as a prison, and still exists. For some time it was almost lost to sight in the confusion of adjacent buildings; these, however, have been demolished. It is popularly supposed that the foundations of one of the towers of this building formed part of the original city wall, but this is open to doubt. The Emperor Charles in 1520 commissioned two architects, Dominique de Waghemakere and Rombout Keldermans, to rebuild the steen, and under their direction there arose a curious structure, well suited, from its general irregularity and the dungeon-like appearance of its rooms, all of which were small and ill-lighted, and bore such awe-inspiring names as "thieves' pit," "torture-room," etc., for the infamous purposes to which it was put. During the XVIth century Antwerp was the scene of much religious persecution, and both torturings and executions repeatedly took place in the steen. The road which led to the prison gates was a rather rough ascent, being nothing more than a bridge composed of a few arches thrown across the old ditches that had surrounded the burgh. Owing to the construction of the quays, it is rather difficult to form a correct idea of the relative position of the old steen. The building itself is now used as the museum of antiquities mentioned above. Within can be seen a weird old kitchen, the interrogatory, the chapel, and numerous cellars. From one of these latter there runs a pipe to the hall. This pipe is said to have been used by those prisoners who wished to confess, but M. Génard, in his book on the museum, thinks it far more probable that it "was put there to serve as a means of spying upon the prisoners undergoing torture." Into the various rooms there has been brought together a queer old collection of things—armour, bits of old embroidery, porcelain, drawings and cartoons, mostly of the period of the later Brabant schools, plans and sections, models of architectural innovations, fine pieces of old furniture, and so forth. Within the steen one is far away from bustling Antwerp, away in the past when men knew how to torture and religious disputes were settled in any way rather than by verbal discussions. One can still see the little slanting window-openings, through which, no doubt, recalcitrant prisoners were thrown into the river.

Included in this collection is a plaster cast of Quentin Massys' monument, which was placed at the foot of the cathedral on the left hand of the great west door. This monument is in the form of a slab fitted into one of the canopied niches. It was designed by Cornelius Van der Geest, and erected in 1629. At the top of the slab is a bas-relief of the painter's head. Beneath this, side by side, are representations of the two professions which he adopted—on the right an anvil hanging chained, on the left a palette and brushes. Beneath these are two small slabs with inscriptions (that on the right consists of the words "Connubialis Amor de Mulcibre fecit Apellem"), and at the bottom a skull surmounting the arms of the painter, with the words "in synen tyd grofsmidt, en daernaer fameus schilder" (at one time a blacksmith, later a distinguished painter) written round it. Outside the town little of this man's work is to be seen—inside he has left an indelible mark. Close to the west door of the cathedral, in a little open space called the Handschoenmarkt, is an old well. This is of grey stone, and is in the form of a low pedestal standing on two steps. It is no longer in use, but is boarded over. Above it is a somewhat elaborate iron canopy, dating from 1530 and generally attributed to Massys, though this is not certain. There are four upright posts supporting the ironwork, which is not perfectly regular in design, though exhibiting a general symmetry. At the top is a statuette in the same metal of some mythical being, supposed to be the hero Brabo, who succeeded in cutting off the hand of the giant Antigonus. The figure, clad in armour, is holding out the hand, encased in a gauntlet. This iron canopy is of interest, as it may be said to illustrate the Brabant love of filagree. Both in architecture and sculpture the Brabants have long been inclined to invest their work with a certain superfluity of ornament, which at times is not in the best of taste. In itself the ornamentation may be of a picturesque nature; in combination it often succeeds in detracting from the beauty of the whole. To such an extent has this decorative scheme of things been carried that in some buildings it appears as though the superstructure had been raised only to exhibit

the various ornaments with which it may have been adorned! And so it was only in keeping with this characteristic of the Belgian artists that when the revival in sculpture took place some years ago several chryselephantine statuettes figured amongst exhibited work, and scored a marked success. Napoleon is said to have spoken of the tower of Antwerp Cathedral as resembling lace made at Malines; he might have carried his simile considerably further.

In the Museum of Painting at Antwerp there are several of Massys' paintings, and from these it is possible to form some idea of his work. A pietà, consisting of a centre-piece and two wings, occupies the whole side of one of the saloons, and stands opposite to one of the large paintings of Memling. This picture exhibits perhaps more of the southern refinement and richness of treatment than is commonly to be found in the work of Flemish painters. The face of the dead Saviour is most remarkable, the effect of the death struggle being suggested in the most potent manner. The Virgin is wonderfully human, and would by itself make a picture of great beauty. The two wings represent the martyrdom of St. John the Baptist, on the left, and that of St. John the Evangelist, on the right. A noticeable feature in the former of these two is the diaphanous drapery which adorns Salomé. The pietà was painted in 1508, and was formerly an altar-piece in the cathedral. Massys belongs to the second period in Belgian art, when "genre" painting had just come into existence in Holland. This period embraced the greater part of the XVIth century. Massys occasionally painted "genre," though most of his subjects were religious. He was born in Louvain. Here in the church of St. Pierre is a "Holy Family" from his brush. This picture has an interesting history, being one of those numerous works of art which were carried off during the French Revolution and restored later. It is perhaps less Italian, and exhibits more purely Brabant tendencies than the Antwerp pietà. Apart from the fact that he was born in Louvain and followed for some time the honourable profession of a blacksmith, little of his earlier history is known. It is probable that he more than any other of his contemporaries raised the school of painting in Antwerp to a celebrity equal to that of Bruges, where the Van Eycks and, later, Memling had already brought the town into prominence through the excellence of their work. In connexion with Massys' earlier life spent by the anvil, a curious story is offered in explanation of the change in professions. Falling in love with the daughter of an Antwerp painter, he learnt that his suit would be acceptable only on the condition that he relinquished his own profession for the loftier one practised by the girl's father. In other words, the father hoped, by setting the unwelcome suitor a task which he judged would prove impossible to a blacksmith from Louvain, to rid himself of Massys, but he was at once disappointed and astounded, for Massys proceeded to take up a palette, and straightway produced the first of a number of masterpieces. Unfortunately for its own veracity, the story goes on to give Franz de Vriendt, or Floris, as he is generally called, as the name of the father. Floris, however, was only a child at the time of Massys' death in 1531.

As far back as the XIIIth century the foundations of the Antwerp cathedral, or more correctly speaking, of the Church of Nôtre Dame, were laid, and in about a hundred years the edifice as originally planned was completed. This, however, was added to in 1521, when the Emperor Charles, under whose auspices so many architectural enterprises were taken up in the Netherlands, caused a new choir to be built and commissioned Waghemakere to finish the tower, which had been begun by Appelmans in the preceding century. The tower is 400 ft. high, and is of open design, remarkably slender, and beautifully executed. It contains a peal consisting of nearly a hundred bells, which in tone and power are second only to those at Bruges. The first great bell, called "Gabriel," was cast in the *cimetière*, where the Place Verte now stands. In 1507 another great bell, weighing 8 tons, called the "Carolus," in honour of the son of Philip the Good, was cast. A dial was placed on the tower in 1540. The cathedral also possesses a second, though less important, peal; the first, which is placed beneath the clock, belongs to the town of Antwerp, the other, under the dial, is the property of the church. A second tower was begun, but never reached more than a third of the projected height. This is not altogether a rare feature in Belgian churches, the cathedral at Malines being a case in point. A small turret is placed on this second tower, and others of a peculiarly Brabant type adorn the east end of the cathedral. Although by universal consent considered the most beautiful Gothic church in Belgium, it suffers somewhat from its cramped position, as it is practically shut in by little streets, and appears to rise out of a block of modern buildings. Lying along one side of the Place Verte, its enormous size is lost, for the view is obstructed by trees and buildings. The six aisles, an architectural departure peculiar to this church, can be seen only as penthouses, which might from the glance one gets at them well belong to the adjacent houses. The interior is simple and impressive, the numerous pillars enhancing the effect of its size. Within the numerous chapels are several masterpieces of Rubens, the most famous of which are the "Descent from the Cross," the "Elevation," and the "Assumption of the Virgin." In the choir, which is divided into a number of chapels, are the pictures, a beautiful collection altogether, and the stalls themselves are carved finely, being decorated with statuettes something after the manner of those in the church of St. Gertrude at Louvain.

As a rule, the most important secular buildings of Belgium are highly-decorated structures, generally in more than one colour. The Hôtel de Ville at Antwerp, which is close to the cathedral, and extends along one side of the Grande Place, shows fewer Flemish characteristics than almost any other town hall in the country. It is a large structure, and was built in 1560 from designs by the painter de Vriendt. It was the earliest work of importance in Antwerp built in a style other than the ogival or pointed arch style. It is a kind of Florentine palace, de Vriendt's designs being decidedly Italian. The principal façade is 250 ft. long, and rests on a rustica; it is decorated with red and black marble slabs arranged in five rows. Above are three tiers of columns, some Ionic, some Doric. There are several fine saloons in the interior, but the few pictures with which they are adorned are no more than mediocre specimens of Flemish art. In 1576 the Spanish garrison in the city mutinied owing to arrears of pay, and, on their demands not being met with, made a dash for the Hôtel de Ville as the chief secular edifice in the city. The mutineers succeeded in partly destroying it by fire before they received the money due to them. The damage was not very great, however, and in 1585 the building was restored in its present form.

At one period in its history Antwerp possessed a number of monasteries, some belonging to the Dominican order, others to the Franciscan. Many of these contained veritable treasures of art within their unpretentious walls; the best works of such masters as Rubens, de Vriendt, and Vandyck could have been found adorning their halls and chambers. As the years passed these monasteries were gradually suppressed, and their treasures confiscated by the municipal authorities. On the site of one of these ancient monasteries, which belonged to a sect known as the Minorites, stands the present Museum of Painting, a fine modern building, containing several lofty saloons well adapted to the purpose to which they have been put. It stands in the Rue des Récollets, a street parallel to the river, and near the south station. Probably in no other European town is there such a representative collection of native works of art. All the painters who were born, or lived, in Antwerp are represented by some of their most famous works, and from the several hundreds of pictures exhibited it is possible to form some idea of the development of art in the town. Rubens, whose parents were natives of Antwerp, spent most of his life and died in Antwerp; Quentin Massys lived there: Vandyck was a native of the town, and early apprenticed to Rubens; Teniers the younger was born there—and all these masters are fully represented, as well as Jordaens, Van Veen, the two de Vos, de Velde, de Vriendt, and Bernard Van Orley. The museum itself is of grey stone, columned somewhat in the old Greek style, and at sharp variance with most of the other buildings. It lacks superfluous ornament, and stands isolated in its own grounds.

In addition to the cathedral, there are three or four other churches of interest in Antwerp. Like the cathedral, however, these suffer from their position, and it is impossible to fully appreciate the architecture from the proximity of other buildings. After Nôtre Dame, the church of St. Jacques comes next in importance, but it is utterly lost in its surroundings. The exterior is not of much interest, but a whole volume has been written about the interior, which probably surpasses any other church in Belgium in the richness and variety of its ornamentation. Yet here, as elsewhere, the general effect is to an extent spoiled by the admixture of too many types of ornament. That which belongs to the XVIth century—from which the church dates—differs materially from those of later periods. Much belonging to the XVIIth century, which was a time given to a slightly decadent ornamentation, is mixed in with earlier and, on the whole, more beautiful work. The architect of the church was the elder Waghemakere. The work was continued by his son Dominique, helped by Keldermans; but in all probability the edifice was never entirely finished, although much was added in the XVIIth century. The tower should have been higher than that of Nôtre Dame. Inside the church there is an extraordinarily ornate altar-piece of marble, the combined work of the three artists, Kerrickx, the younger Quellin, and Willemsens, the latter of whom is also responsible for a finely-carved wooden pulpit. Rubens' tomb is in this church, and the reredos contains one of the finest of his pictures. It is supposed to contain portraits of his family. The church of St. Paul, a little to the north of the Grande Place, formerly belonged to the Dominicans, who owned a monastery in the neighbourhood. It is of grey stone, and belongs to the latter half of the XVIth century. The tower may be taken as fairly typical of Flemish work of its period. There is a modified cupola at the top, with a light framework supporting a sphere. This latter is a common feature in Brabant churches. Eight columns support the cupola, and round the bases of these runs a low balcony. This octagonal design is repeated below on a larger scale, though the design here is a closed one. Many other towers in the vicinity lack some of the "solidity" of the St. Paul's tower, but they are generally modelled on a similar plan. There is little ornamentation or "lace-work," such as is seen on the cathedral tower. The Jesuits' Church, which is near to the cathedral, has to a great extent been rebuilt, owing to the damage done by fire in 1718. The tower is far more imposing than the one belonging to St. Paul's Church, but less typical. The two other churches of note are the church of the Augustines (1615) and the church of St. Andrew, which dates from the early part of the XVIth century.

The appearance of Antwerp was immensely altered by the construction of the quays and docks, both of which were built at the beginning of last century by Napoléon. The quays extend from the docks on the north along the bank of the Schelde for the distance of a mile. The happy idea of establishing a raised promenade on the top of these has been carried out. At a point about half-way down the quays stands a triumphal arch, erected in honour of Charles V. on the occasion of his state visit to the city. This is of interest in being the only piece of masonry at all connected with the name of Rubens. It seems that the arch was moved into its present position from some place more towards the centre of the town. It now goes by the name of La Porte D'Eau, and stands isolated. There is an old print, however, which shows it fitted in between some small houses.

Unlike Bruges, Antwerp does not give one the impression of being a true city of the Middle Ages—the quays, the broad streets, and modern houses prevent that, but there is much to make it of more than ordinary

interest. The inhabitants appear to be three-quarters Flemish. The river is always filled with craft of every conceivable description, and there is a curiously wide ferry-steamboat which carries traffic and passengers to the small part of the town, which has but lately sprung up on the other bank. R. S.

NOTES ON NEW BUILDINGS IN LONDON.

I.—The Ritz Hotel Building in Piccadilly, W.

What may perhaps be considered a new departure in London street architecture is rapidly approaching completion in the Ritz Hotel building, Piccadilly, and we had hoped, from the early manifestations of restraint and dignity in the simple outlines of the structure, that the architectural effect would have been satisfactory and imposing. But as the scaffolding disappears one's hopes are dashed to the ground, for the details of the building are so disconnected and disappointing, and the want of relief (which might have been easily obtained in the façade towards Piccadilly by bolder projections of the end and centre blocks) is rather depressing. Somehow or other many of the details appear to be in discord, and one notes the insignificant appearance of the somewhat shallow main cornice, with its rather elongated-looking consoles, which latter one thinks would have been more in keeping had they not been continued below the springing of the window arches at that level. Directing one's eyes to the top story, the sight is arrested by a balustrade which produces a most unfortunate feeling as regards the proportion of the window openings behind it, and coming down the façade to Piccadilly one feels that the balustrades to the windows at the first floor level would have been more effective and useful if they had been brought forward as small balconies, thus giving some shade and helping to relieve the flatness of the elevation. One feels, too, that the grouping of the bays in the Piccadilly façade should have been more pronounced, in order to give deeper vertical lines of shadow. It is not easy to discern the reason for the unhappy proportions of the windows lighting the upper floors, and in the case of the windows directly above the main cornice it seems that the design would have been happier if the sills had been kept well above the cornice, so that the whole of the window opening might have been visible from the footway on the north side of Piccadilly. The window openings have a very squat appearance, and the window frames give an unfortunately thin effect to what may possibly by others be considered a broad and vigorous design.

The main entrance in the Piccadilly façade does not impress one as being sufficiently imposing for a West-end hotel; and a somewhat similar feature, a sort of dormer gable, introduced on the frontage to the Green Park is scarcely in harmony with the general verticality of the design.

Looking upward to the skyline, a succession of chimney-stacks meets the eye, causing a feeling of restlessness, which is further disturbed by the elaborate ornamentation of the caps, giving the chimneys an overtopped appearance and leading one to think that a simple and severely plain design for them would have been more in harmony.

It is somewhat difficult to reconcile the irregular portions of the building on the roof as seen from the corner of Arlington-street and Piccadilly; and the blazing colour effect of the ruddy brickwork in the elevation towards Wimborne House is rather startling, and out of tone with the subdued grey of the stonework to the main façades.

In some respects the building shows a lack of perspective, and when looking at it from the Palace end of the Mall it gives one the impression of having been designed to balance on the left hand the excrescence on the right hand at Queen Anne's Gate, and a feeling of sympathy arises on behalf of the Royal residents. In conclusion, the feeling creeps into one's mind that the chance of designing a notable addition to the street architecture of London has been missed, and one deplores that such an important and prominent site has not been covered with a building of a more satisfactory architectural character.

THE "HERMIT WINDOW" AT DARTFORD.

This little piece of stained glass, the height of which is only 26 in., is shortly to be placed in what was formerly the window of an anchorite's cell in the north-west corner of the parish church at Dartford, Kent. The cell was occupied, almost down to the time of the Reformation, by a succession of hermits, whose office was to guide the Canterbury pilgrims across the ford of the river Darenth, which flows by the church. The hermit is, therefore, represented as wading through the river with a pole and lantern.

The "Hermit Window" in the Parish Church, Dartford, Kent. Designed by Mr. Hugh Arnold.

The hermit's cowl and cloak are formed of various shades of dark, rather quiet blue, and the water of very pale, sparkling blue and greenish-blue slab glass. The background is of silver-white slab, unpainted, and the border, also unpainted, of very pale streaky yellow pot-metal, running from almost white to darker yellow and orange in one or two places. The lantern is a piece of jewel-like yellow slab.

The photograph shown was taken from the glass in the studio of the artist, Mr. Hugh Arnold.

A New Technical Journal.—The first number of *Gas and Oil Power*, a new illustrated monthly review for factory owners and other power users, which has been in preparation for several months, will be issued in October. The co-operation of leading experts in this country has been secured, and Mons. R. E. Mathot will act as chief continental correspondent of the new publication. The offices are at 19, Ludgate-hill, E.C.

THE CHEAP COTTAGES EXHIBITION.

The following is a list of the awards made by the judges appointed by the Cheap Cottages Exhibition Committee of Organisation :—

Cottages.

Class 1.—Cottage to cost not more than 150*l.* :—First prize, 100*l.*, No. 14, Messrs. Green Brothers, Whittington, near Chesterfield; architect, Percy Houfton, Chesterfield. Second prize, 50*l.*, No. 23, Messrs. Bennett & Bidwell, Letchworth. Third prize, 25*l.*, No. 35, Messrs. Potter & Co.

Class 2.—For the best pair of five-roomed cottages (including scullery or kitchen scullery) erected at a cost not to exceed 300*l.* :—First prize, 50*l.*, No. 35, Messrs. Potter & Co., Westminster. Second prize, 30*l.*, No. 70, A. H. Clough, Burley, Ringwood. Third prize, 20*l.*, No. 67, The Copartnership Tenants' Housing Council.

Class 3.—For the best group of three or four cottages, no one cottage to contain more than six rooms, including scullery, and erected at a cost not to exceed 35*l.* per room :—A prize of 25*l.* is awarded to No. 61, Geoffrey Lucas, A.R.I.B.A.

Class 2.—For the best detached cottage, or pair of cottages, each containing not more than six rooms, including scullery, and erected at a cost not to exceed 35*l.* per room :—A prize of 100*l.* is awarded to No. 79, A. Randall Wells, Hastings.

In addition, the following prizes have been awarded :—

Prize of 100*l.*, offered by an anonymous donor, for the cheapest cottage for value given :—Nos. 69-71, A. H. Clough, Burley, Ringwood.

Prize of 50*l.*, offered by the Associated Portland Cement Manufacturers, for the best cottage built of cement concrete :—No. 58, the Concrete Machinery Company, Liverpool; architect, G. Fraser.

Prizes for wooden cottages (a wooden cottage is considered to be one built of timber between the roof and the foundations) :—First prize, 50*l.*, No. 80, F. W. Troup. Second prize, 25*l.*, No. 81, Messrs. Smith & Brewer.

Designs.

Prizes were also offered, and have been awarded, for the best designs of cottages, etc., on the same lines as the cottages themselves. These prizes were awarded as follows :—

Class 1.—First prize, 10*l.*, Messrs Bennett & Bidwell, Letchworth. Second prize, 5*l.*, W. A. T. Carter, Wimbledon.

Class 2.—First prize, 10*l.*, W. R. Mosley, Slough. Second prize, 5*l.*, W. Marshall, Hatfield.

Class 3.—First prize, 10*l.*, F. L. Crane.

Class 4.—10*l.*, G. Lucas.

The special prize of 10*l.*, offered by Mr. H. G. Elwes, F.R.S., for the best design and specification of a wooden cottage, to be constructed entirely of English timber, has been awarded to the design submitted conjointly by Mr. Detmar Blow and Mr. Ernest Gimson, of Sapperton, Glos.

Diplomas.

The following accessories have been recommended for diplomas :—

Messrs. Vickers & Field, wire bitumen damp course.

Excelsior Patent Stone Company, Northampton, for paving.

Blackwell & Co., ruberoid for roofing.

R. Whitbread, Carlton, near Nottingham, crane rod casement.

Messrs Elkay & Cornes, Ltd., model cottage range with copper combined.

Messrs. Clark, Hunt, & Co., "Ideal" range in cottage No. 32.

Messrs. Fred Betts, Ltd., "Sure to Go" range, in cottages 69-71.

Messrs. Edwards' copper and hood in cottage No. 81.

The judges' report is signed by Messrs. Octavia Hill, W. R. Lethaby, J. C. McCowan, Robt. Weir Schultz, Thackeray Turner, G. Sims Woodhead, and Harriot Yorke.

FIRE TESTS OF CONCRETE AGGREGATES.

We have received the following communication from the British Fire Prevention Committee :—

"1, Waterloo-place, Pall Mall, London, S.W., September 26, 1905.

Sir,—Having regard to the importance that is apparently being generally attached to the fire tests the Committee are about to undertake with various concrete aggregates, it has been decided to issue exact data as to the concrete varieties that will be under investigation, together with some additional particulars prior to the actual tests.

The tests are to take place in the middle of October, and, as far as accommodation can be provided, it will be put at the disposal of the technical officers of public bodies interested in the question, who should apply for cards (in writing) to the Assistant Secretary, No. 1, Waterloo-place, S.W., before October 7.—Yours very truly, for the British Fire Prevention Committee,

Ellis Marsland, Gen. Hon. Secretary.

THE FIRE RESISTANCE OF CONCRETE.

The Fire Prevention Committee's Special Tests With Various Concrete Aggregates.

The following are the particulars of the arrangements for the fire and water tests with different aggregates of concrete to be undertaken by the British Fire Prevention Committee, with a view of comparing the fire resistance of different aggregates when subjected to fire and water under absolutely identical conditions, the aggregates being those in common building practice, and the cement used being in accordance with the standards of December, 1904,

known as "Ferrocrete" cement, provided by the Associated Portland Cement Manufacturers.

Seven floor slabs are to be under test, each slab measuring 3 ft. 3 in. by 10 ft. 9 in., and being 5 in. thick. The slabs have been placed side by side over one of the committee's testing chambers, thus forming a floor, the sides of each slab being supported by encased girders.

The concrete aggregates of each slab are as follows:—

No.		Parts.
1.—Slag concrete	Blast furnace slag	3
	Clean sand	2
	Cement	1
2.—Broken brick concrete	Broken brick	3
	Clean sand	2 ½
	Cement	1 ½
3.—Granite concrete	Broken granite	3
	Clean sand	2
	Cement	1
4.—Burnt ballast concrete	Burnt ballast	5
	Cement	1
5.—Coke breeze concrete	Coke breeze	5
	Cement	1
6.—Clinker concrete	Furnace clinker	3
	Clean sand	2
	Cement	1
7.—Thames ballast concrete	Thames ballast	3
	Clean sand	2
	Cement	1

The centering under the slabs will be struck fourteen days after completion of each slab. The time for setting allowed before the test will be thirty-five days.

The slabs will be tested as for the "fully protective" standard (Class A.), which means that each slab will be loaded with 2 cwts. per square foot, that the test will be of two and a half hours' duration, that the temperature will be raised to 1800 degrees Fahr., and that the fire test is followed by the application of water for two minutes from a steam fire engine to the fire side (under side) of the slabs."

FRONT, 40, OLD BOND-STREET.

THE front shown here is to be built in white Portland stone with forged iron casements; the roof to be of grey stone tiles. Internally the ground floor is treated with modelled plaster ceiling and frieze, marble floor, and oak panelling to the walls.

The basement, which will form a showroom, will be panelled in white wood, painted white, with modelled plaster ceiling and frieze, and the floor laid with mosaic.

The staircase will be in oak, and the walls panelled.

The architects are Messrs. W. & E. Hunt.

ARCHITECTURAL SOCIETIES.

BRISTOL ARCHITECTURAL SOCIETY.—Mr. H. Dare Bryan has recently resigned the position of hon. secretary and treasurer to the Bristol Society of Architects, after having held the office for seven years. Mr. Richard C. James, A.R.I.B.A., of Eagle Insurance-buildings, Baldwin-street, Bristol, has been elected to fill the office. All communications in future should be sent to him at the above-mentioned address.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The committee of the Exhibition of Architectural Refinements gave a farewell dinner on the 21st inst., at Messrs. Ferguson & Forrester's, to Mr. and Mrs. William Henry Goodyear, on the occasion of their leaving Edinburgh for New York. Amongst the guests present were Mr. and Mrs. Goodyear, Professor Cooper, Mr. Hippolyte J. Blanc, Mr. Lorimer, Mr. Sydney Mitchell, Mr. Thos. Ross, Mr. F. W. Deas, and Mr. and Mrs. H. O. Tarbolton.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—On the 20th inst. a visit was made by the members to the Hampton sewerage and sewage disposal works. It is about seven years since the main drainage works were carried out under the direction of Mr. John Kemp, the late Engineer and Surveyor to the Council. Since 1898 sewer extensions have been necessary, owing to the development of the district, and a hydrolytic tank, on the system devised by Dr. W. Owen Travis, has been provided at the outfall works in order to deal with the crude sewage before it flows on to the contact beds. The total cost of these extensions has been about 7,000*l.*, and they have been carried out under the direction of Mr. Sidney H. Chambers, the present Surveyor to the Council, the consulting engineers being Messrs. Shone & Ault. The district presented exceptional difficulties with regard to the construction of sewers, and it was found necessary to employ intermediate lifts. Ultimately the Shone system of collecting

and delivering the sewage was proposed and carried out. The district is divided into eight areas, in each of which, at the lowest point, is an ejector station, containing Shone's pneumatic ejectors in duplicate, with the exception of one station, which is not duplicated, being required for lifting the sewage of three houses only. Each of the ejectors is capable of lifting the maximum quantity of sewage of the contributing area to the disposal works or to an intermediate station. The air pressure required is 28 lb. above atmospheric. The sewers and ejectors are capable of receiving and discharging the sewage of a total population of 20,000. Two 15 nominal horse-power steam air compressors are provided, each capable of dealing with the sewage of 7,500 people. The sewage on its arrival at the disposal works is delivered into a screening chamber, where it passes through a ½-in. mesh screen, and from them along a covered channel to the hydrolytic tank, which comprises—(*a*) Detritus chambers in duplicate, (*b*) sedimentary chambers, (*c*) liquefying chamber and sludge space, (*d*) upward filters. The sludge from the sludge space is drawn off by hydraulic head to a chamber connected to an ejector, which lifts and discharges it on the land. After passing through the hydrolytic tank, the resultant effluent is conveyed to the bacteria beds. These beds are fifteen in number, built in terraces of five each. The screening chamber was formerly open, and objectionable odours were emitted from it owing to the sewage being retained in the rising main for some considerable time. It has therefore been covered in and ventilated as a part of the general ventilation of the new tank and closed channels. From the screening chamber the sewage, as previously mentioned, is conveyed along a covered channel into one of two detritus tanks, which are worked alternately. Each is capable of holding the average flow of sewage during a quarter of an hour, or one-ninety-sixth of the total daily quantity. When one tank has been in work for a fortnight the sewage is diverted to the opposite tank, and the accumulated sludge is removed from the full tank by means of a valved opening, which allows it to pass into the sludge manhole and through it into the ejector, which sends it into the trenches in the land. The sewage leaving the detritus tanks enters the centre of a transverse channel, which conveys it into the sedimentary chambers of the hydrolytic tank, which consists of two parts. The first portion is divided into three compartments by means of light division walls formed of flagstones. Of these compartments, the two outer are the sedimentary chambers and the central the liquefying chamber. Along the bottom of the sedimentary chambers are narrow openings which lead into the liquefying chamber, and form the only means of liquid communication between these chambers. The whole volume of sewage enters the sedimentary chambers, but only seven-eighths leaves them over the weirs; the remaining one-eighth (12·5 per cent.), with practically all the depositing matters, leaves the chambers through the openings in the bottom and passes into the liquefying chamber. The floating solids are retained for a period, and are then removed through the detritus tanks. The capacity of these chambers is such that a unit volume of seven-eighths of the sewage takes five hours to pass through them. The liquefying chamber has a capacity which allows a unit volume of one-eighth of the sewage to pass through it and over its weir in fifteen hours. The greater length of time allows of the deposition of the suspended matters which accumulate in the sludge space. This space is that part of the tank below the lower margins of the openings in the sedimentary chamber; it forms a half-circle below the liquefying chamber. When the sludge approaches the upper boundary of the space a portion is removed by opening one or more of the valves, and is thrown by the ejector into the trenches. The sewage flowing over the weirs of the first portion enters the channel which leads to the second portion of the tank. This consists of four hydrolysing chambers arranged in sequence. The liquid is conducted to the bottom of each chamber by means of nine 6-in. stoneware pipes, where it is delivered below three arches. The arches support the material, and are constructed of bricks, arranged so as to leave 2½-in. openings between them for the passage of the sewage. The floor under each arch is concave, and forms with the arch a space for the accumulation of sludge. Under each concave floor a line of pipes, having two valved openings, is laid, by means of which the deposit is removed. The material consists of broken flint stone, varying in size from 3 in. to 6 in. The liquid passes upwards through the openings between the bricks and through the material to the surface, where it overflows a wall and enters the downward stoneware pipes of the next chamber. After this operation has been repeated in the four chambers, the liquid, having taken three hours in its passage, enters the effluent channel, which conducts it to the contact beds. The whole of the tank is constructed in concrete, and is covered with armoured concrete. The tank is ventilated by means of a fan driven by a small vertical engine, which causes a lessened air pressure in the air-duct, channels, and tank, and withdraws the gases as they rise to the surface of the liquid. Atmospheric air is admitted at various regulated openings. The chief opening is placed near to the end of the effluent channel, which ensures that the maximum quantity of air shall pass over the surface of the liquid after it has left the tank. This volume is increased in the tank by the air admitted at the several regulated openings. The increased volume passes over the surface of the liquid in the tank, and over that in the affluent channel, to the air-duct and fan. It passes thence to the chimney, where it is discharged into the atmosphere. By these means the air in the tank is at all times practically and relatively, though not absolutely, free from smell.

JUNIOR INSTITUTION OF ENGINEERS.—A visit of this Institution recently took place to the Staines Reservoir Communication Works, which was arranged with the object of affording the members the opportunity of seeing the works in an almost completed state, a visit having been paid some time ago, when all the operations of construction were seen in process. The members were shown round by Mr. Joseph Francis, engineer of the works, Mr. C. W. Pettit, representing the contractors, Messrs. John Aird & Sons, and Mr. Durham, of the Metropolitan Water Board. From the Staines reservoir intake the water will flow into a suction tank (1,000,000 gallons capacity), from which it will be pumped to a height of 24 ft. into two subsiding reservoirs (300,000,000 gallons joint capacity). Thence it will flow through 42-in. pipes to the filter-beds, twelve in number. Sand-washing apparatus is provided, and settling tanks and coke filters for treating the effluent sand-washing water before its delivery into the Thames. The filtered water will be pumped through a 42-in. main t: Cricklewood (thirteen and a half miles), where it will be again pumped three and three-quarter miles to a service reservoir at Fortis Green, Finchley, at a level of 298 ft. above O.D. The engine-house at Kempton Park contains two first-lift engines, three second-lift engines, and eight boilers.

Fifty Years Ago.

ST. JAMES'S PARK.

SIR B. HALL has announced his intention of not proceeding with the proposed road through the enclosure until the project has been considered by Parliament.

In Sir B. Hall's letter respecting the proposed new road through St. James's Park, he lays stress on the desirableness of relieving the traffic for carriages along Parliament-street. Would not this end be attained by opening a carriage-road from Trafalgar-square, at Spring-gardens' corner (where now exists a passage for pedestrians only), and so on to Storey's-gate? This would require the removal of a few houses certainly, but not so many as would be necessary were the park bisected. A READER.

Another writer, "A Londoner," points out that by taking off a small piece of the garden of St. James's Palace, a safe and good way from the park to Pall-mall may be obtained by the existing road, past the end of the German Chapel. "If a foot suspension-bridge be thrown across the water," he adds, "I think it would be a boon to the public, but a carriage-road is an insult to botany and good sense."—*The Builder*, September, 29, 1855.

Illustrations.

MAIN STAIRCASE, MOUNT MELVILLE, ST. ANDREWS.

WE give a view, reproduced from a photograph, of the principal staircase at Mount Melville, a large private house, built on the site of an old one which stood on a well-wooded hill a few miles outside St. Andrews.

The new house occupies a site very nearly identical with that of the old one, and therefore enjoys the same extensive views, and has the advantage of being surrounded by an old garden containing many rare and beautiful trees. During the rebuilding of the house this garden has undergone various additions and improvements, chiefly by way of introducing some formal element. A mount covered with grass and trees has been made out of the excavated earth from the foundations, a sunk garden with stone balustrades has been formed near the house, and the columns of the old front door have been re-erected as a "temple" at the end of a broad cypress avenue.

The general arrangement of the house was designed during the time when the late Mr. Alfred Waterhouse, R.A., was in partnership with his son, but the garden works above mentioned and the staircase which we here illustrate were entirely the work of Mr. Paul Waterhouse.

The materials used in the staircase are Piastraccia for the steps, English alabaster for the hand-rail and balusters, cipollino for the detached shafts, and Cullaloe stone for the piers and pilasters. The marble work was executed by Messrs. Farmer & Brindley, and the masonry by Messrs. J. H. White & Sons, of Glasgow.

HOUSE, No. 95, SLOANE-STREET.

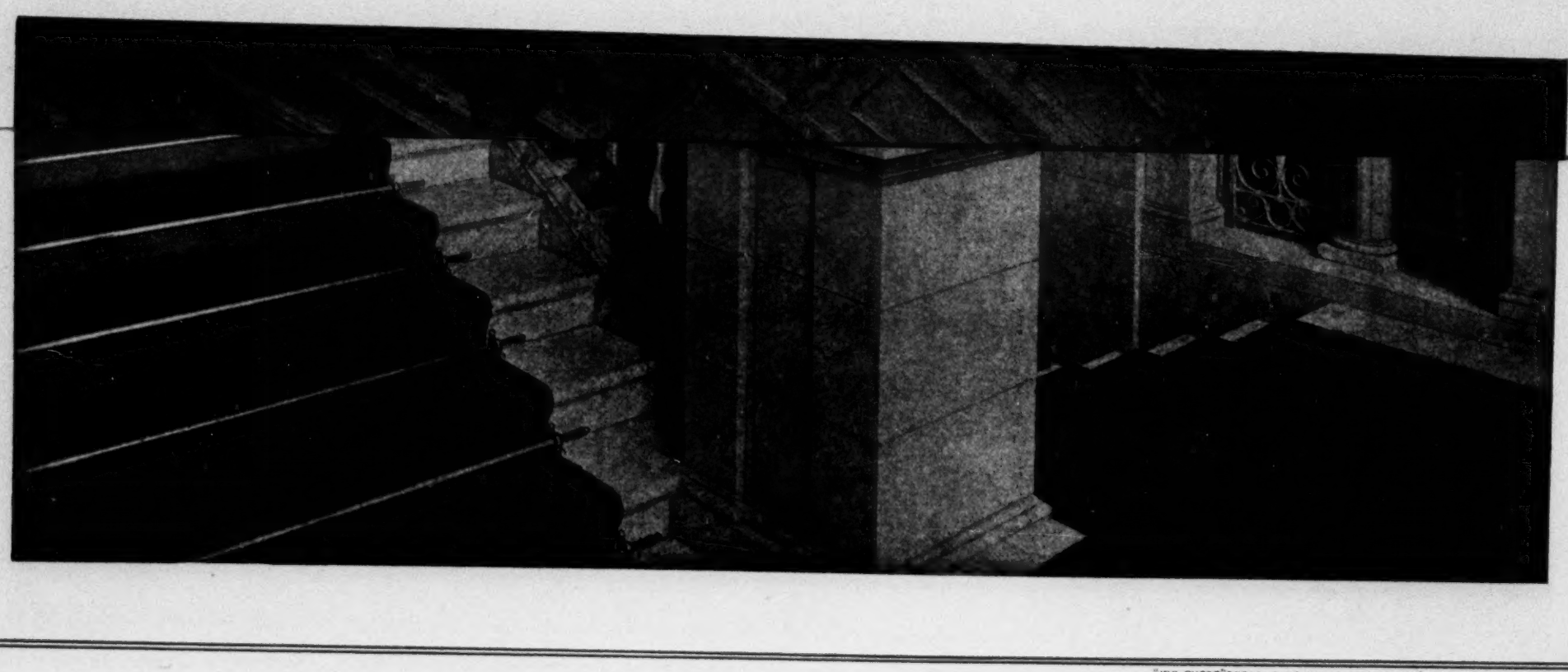
THIS drawing, which shows alterations to the house, No. 95, Sloane-street, and the rebuilding of the stables, was exhibited in the architectural room at the Royal Academy this year.

The architect is Mr. Ambrose Poynter, from whom we have not received any further description of the work, no doubt because, like many other Londoners, he is out of town during the present month.

DETAILS FROM OLD HOUSE, CLIFFORD'S-INN.

THESE two sheets form the remainder of the series of drawings from an old Clifford's-inn house, by Mr. John Barbour, of which the first two sheets were published in our last issue.

HIGH SCHOOL FOR GIRLS, STOCKTON.—The work in connexion with the erection of the new premises of the Queen Victoria High School for Girls at Stockton has now been completed. They are intended to accommodate 150 pupils, and, should the necessity arise, wings can be added. The principal feature of the interior is the school hall on the ground floor, which includes a gallery at the north end and a raised dais at the south end, and will seat from 350 to 400 people. At either end are cloakrooms and other conveniences, one set being for the seniors and the other for the juniors, and both are reached from the playground by means of doors over which porches have been erected. In the front part of the building, also on the ground floor, are two classrooms, in addition to reading rooms for the headmistress and her assistants, storerooms, and the like. The second floor is reached by two staircases, and is occupied by four other classrooms (furnished with oak seats and desks), a library, and a music-room. In the southern portion of the second floor are the caretaker's quarters, which communicate with the dining-room on the same floor through a serving hatch. Adjoining the dining-room provision is made for a laboratory for physics and chemistry. The school is fitted with the electric light throughout. The work was carried out from plans prepared by Mr. Felix Clay, whose designs were selected in competition, by Mr. A. J. Cooke, of Stockton, under the supervision of Mr. T. W. R. Richardson, architect, also of Stockton.



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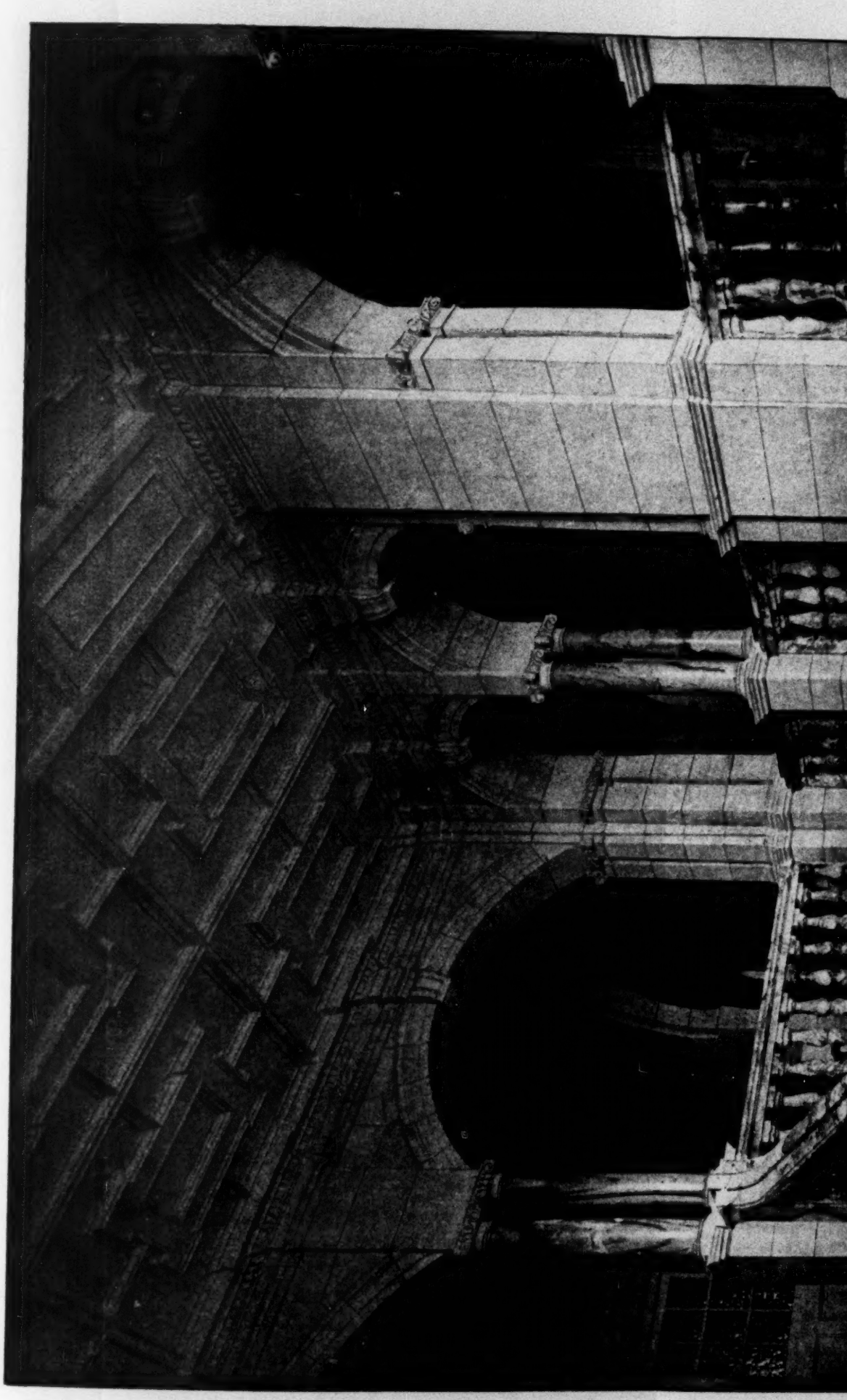

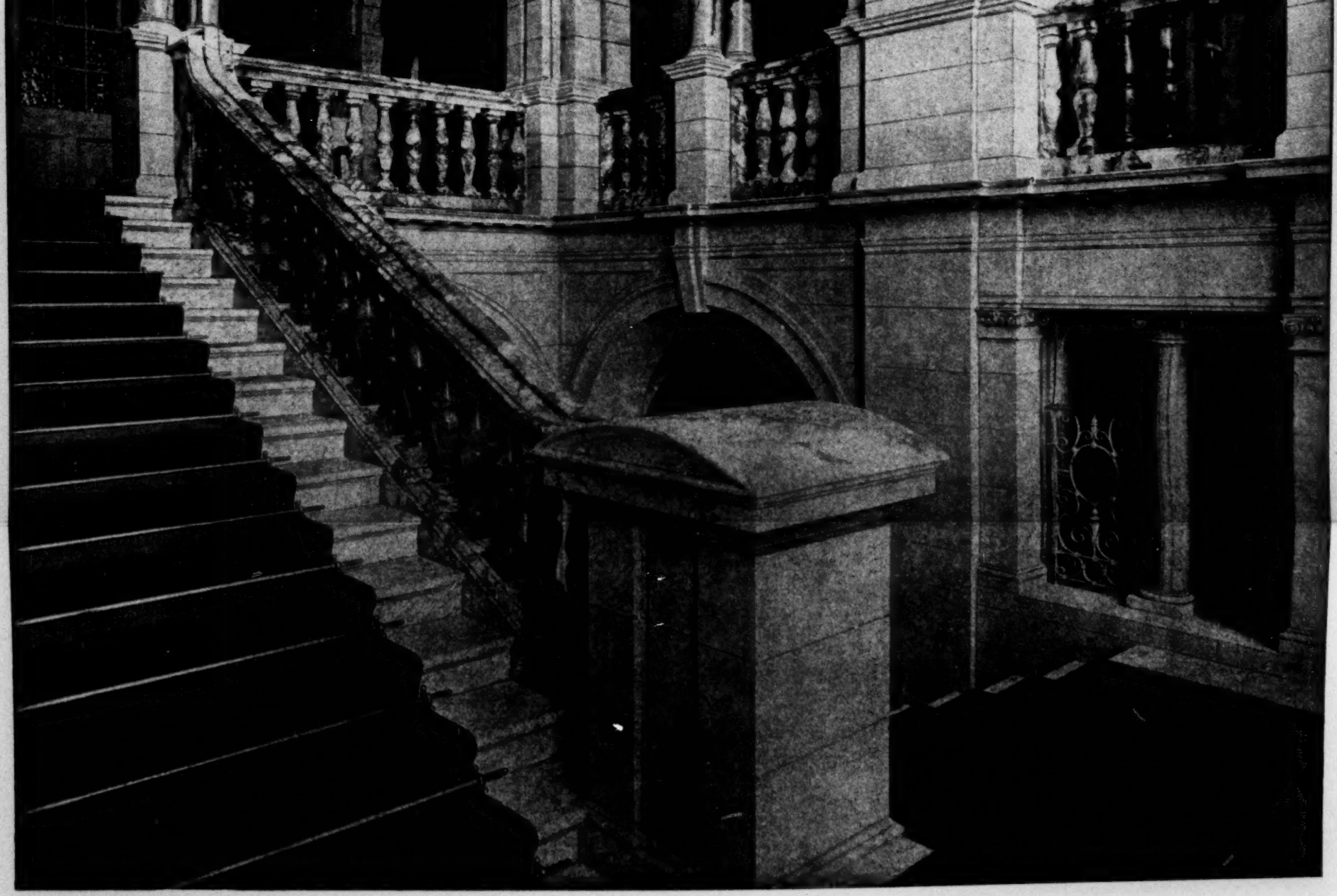

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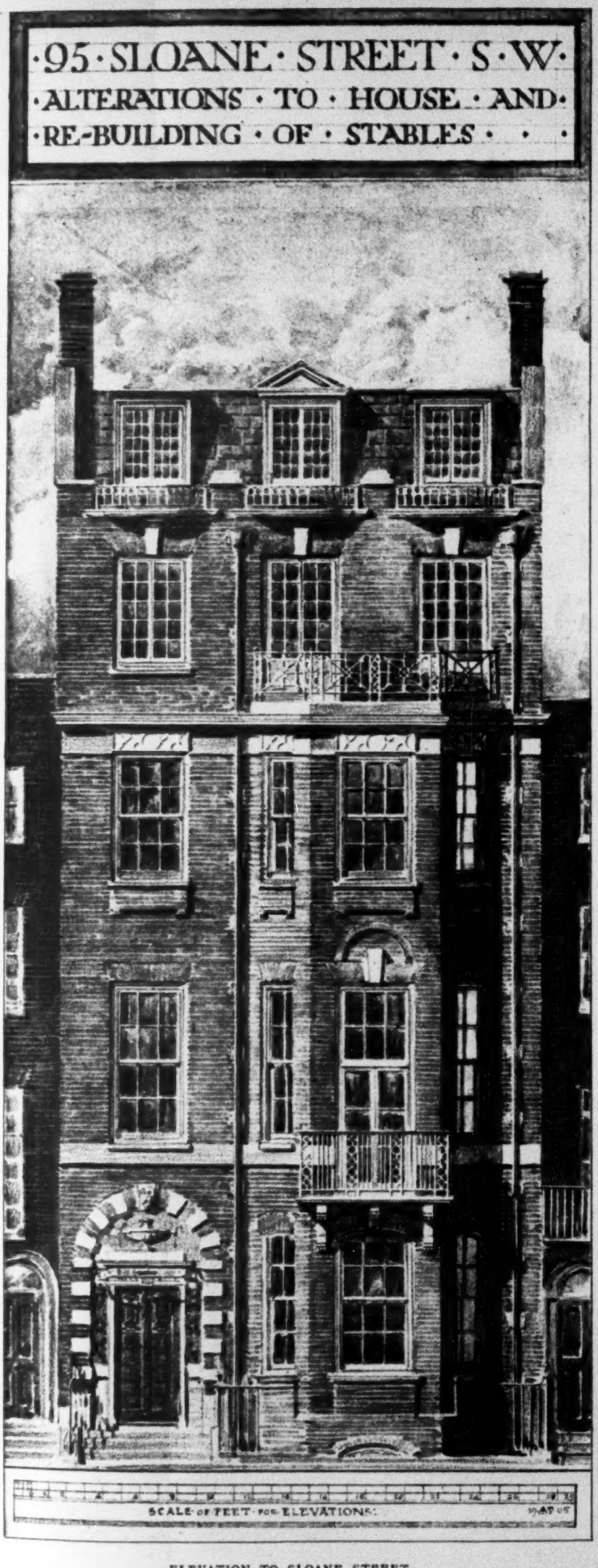
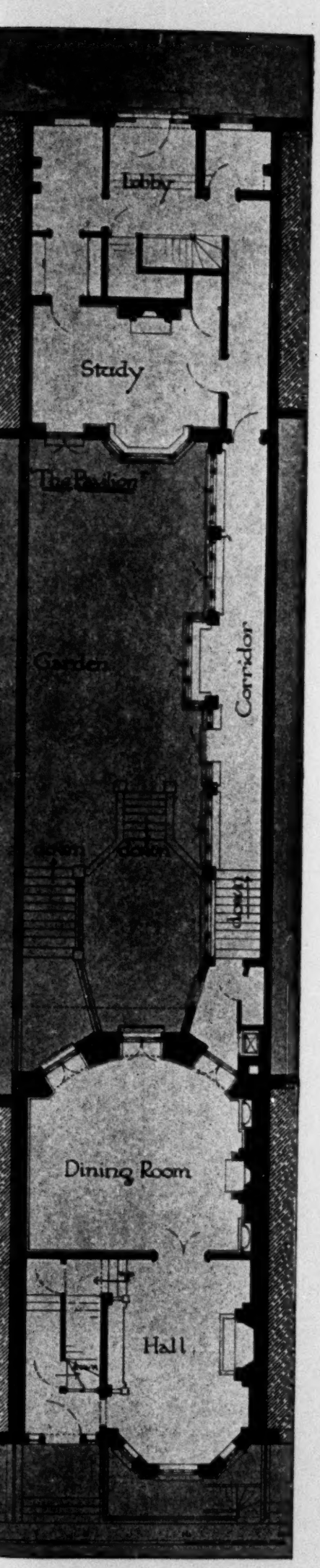


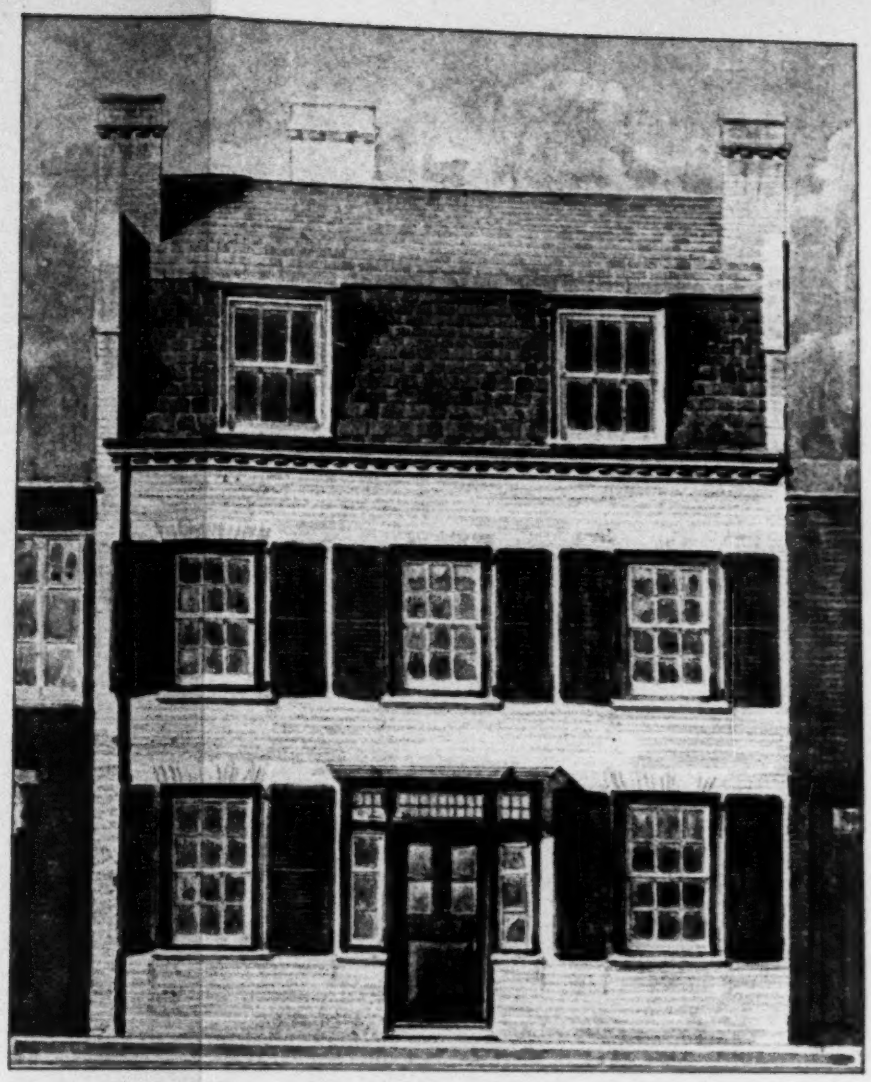
ELEVATION TO SLOANE STREET.

PLAN OF GRO

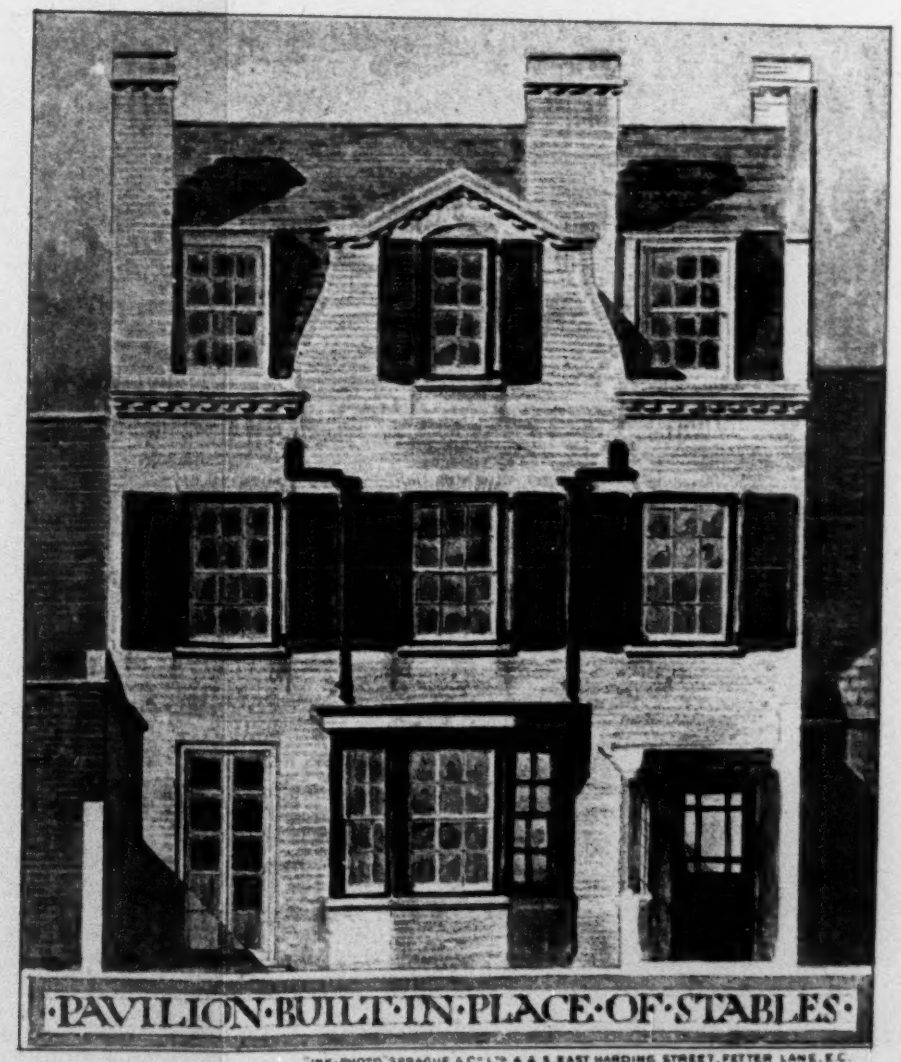
MR. AMBROSE POY



PLAN OF GROUND FLOOR.



ELEVATION TO MEWS.



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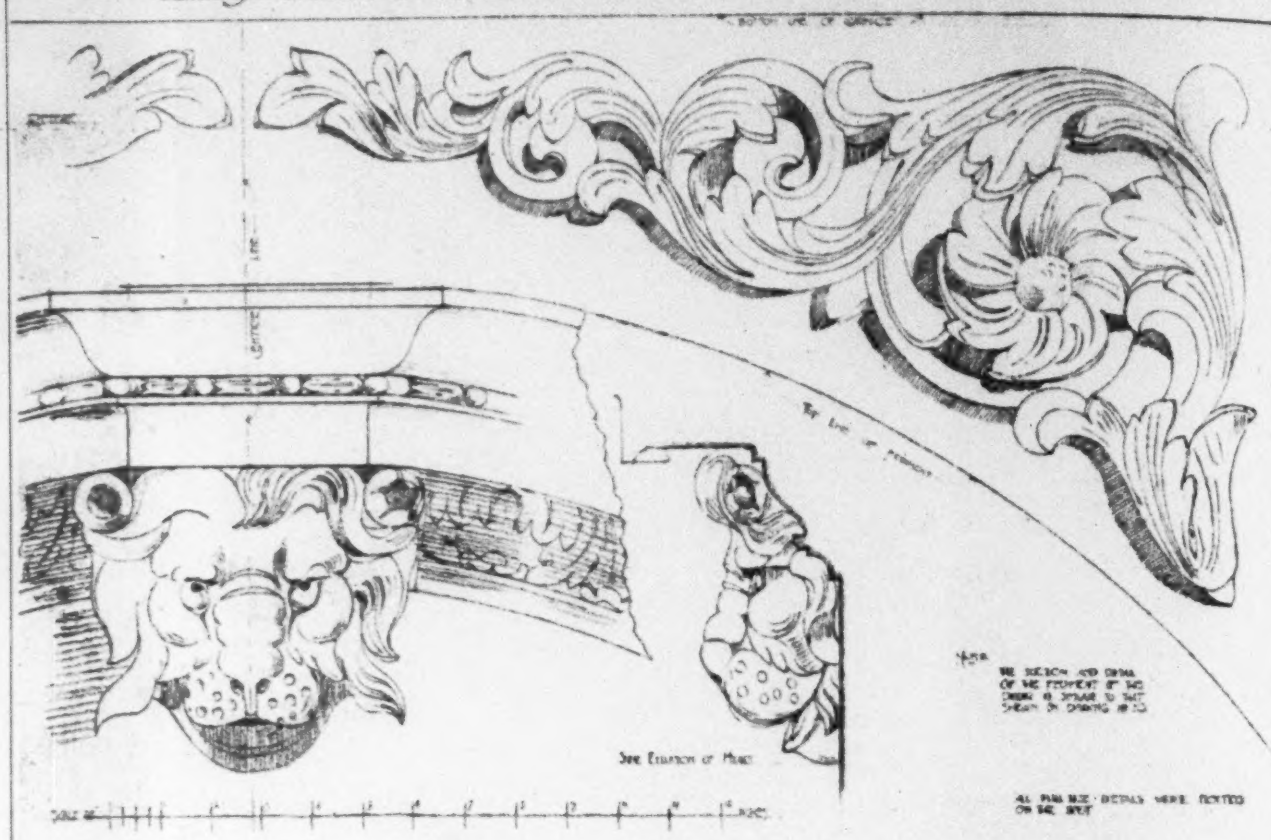
ELEVATION TO GARDEN.

. AMBROSE POYNTER, ARCHITECT.

Nº3 CLIFFORDS INN.

Drawing Nº1

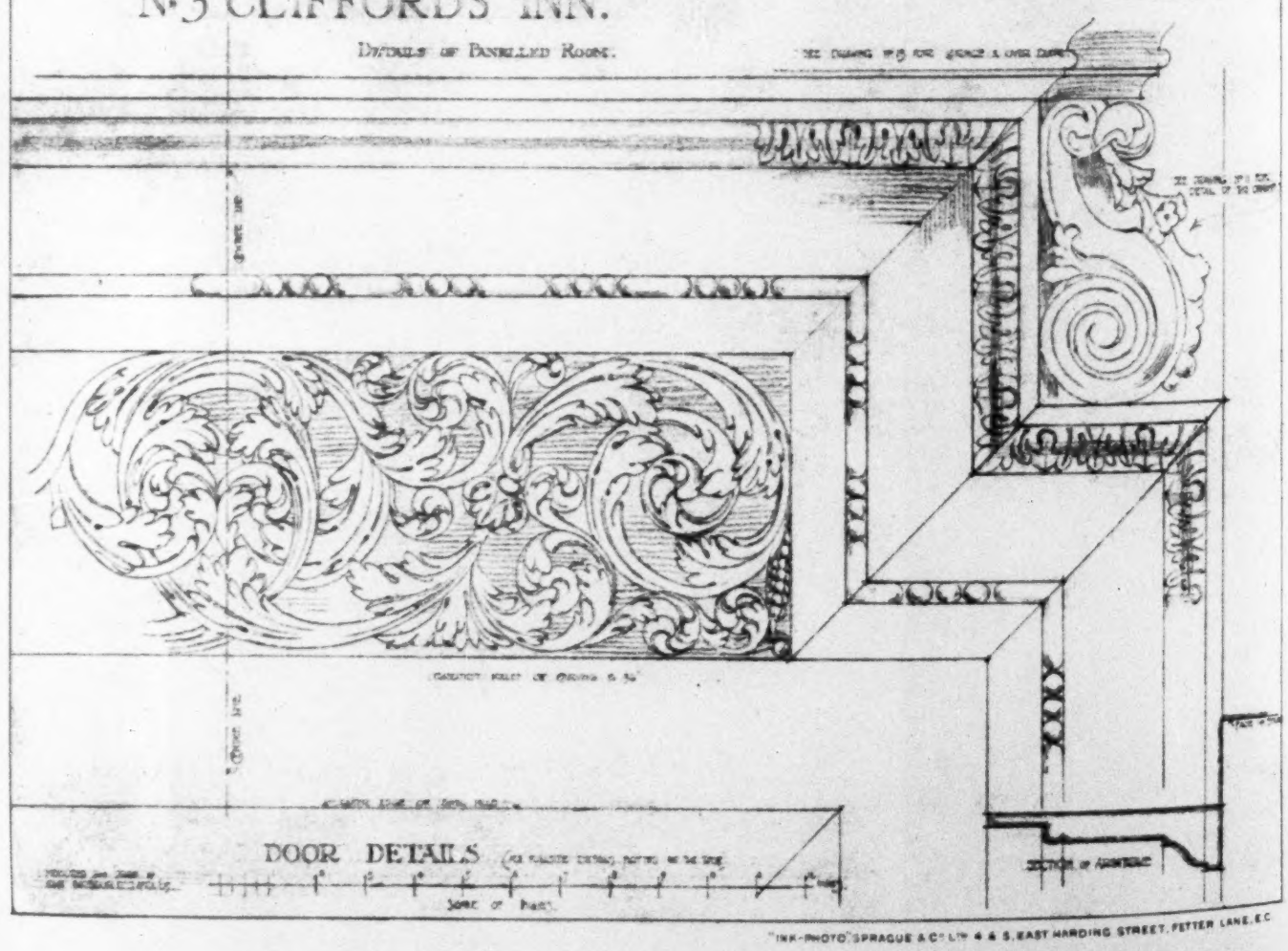


OVER DOOR DETAILS.

Nº3 CLIFFORD'S INN.

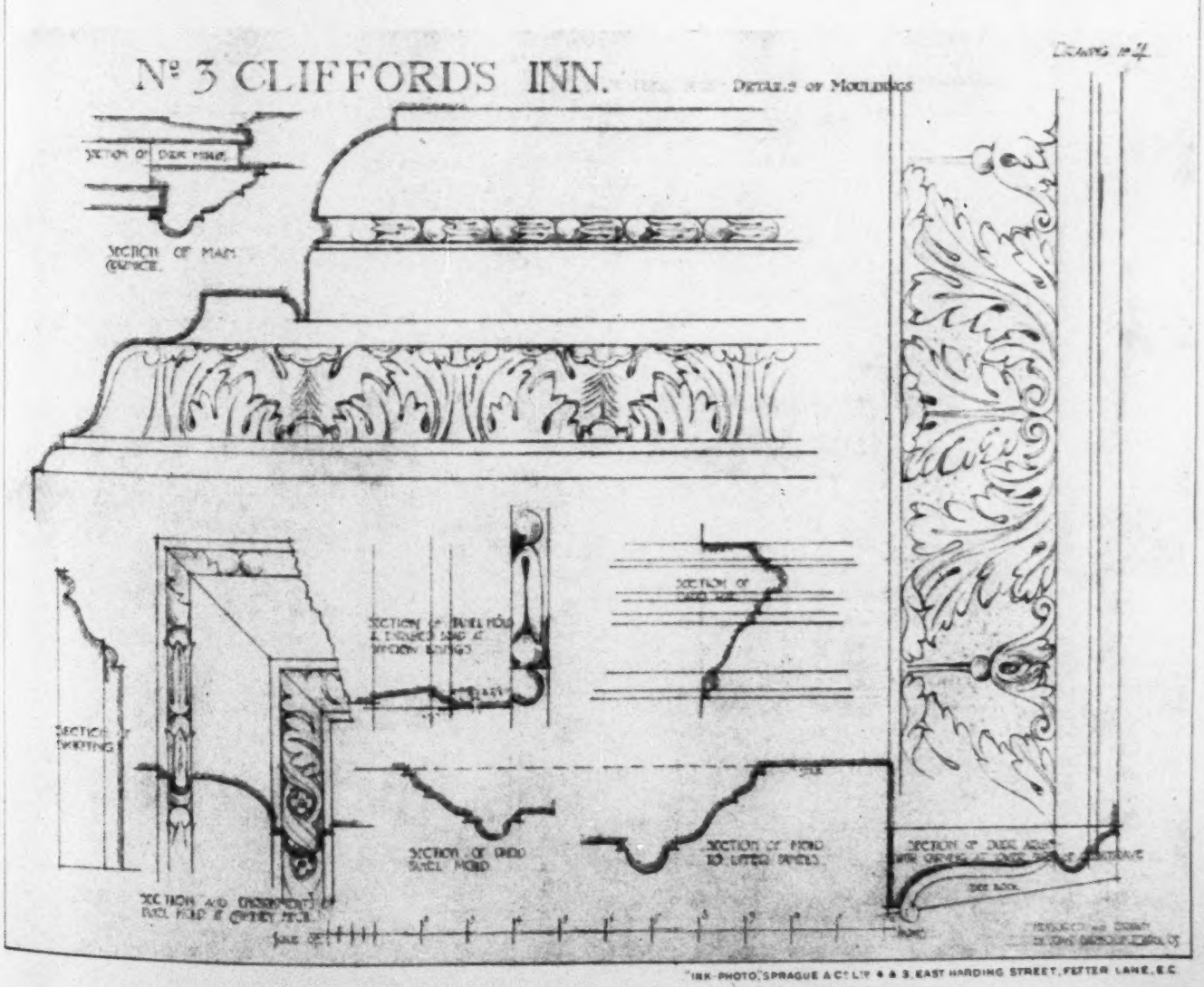
Drawing Nº2

DETAILS OF PANELLED ROOMS.



DOOR DETAILS

"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



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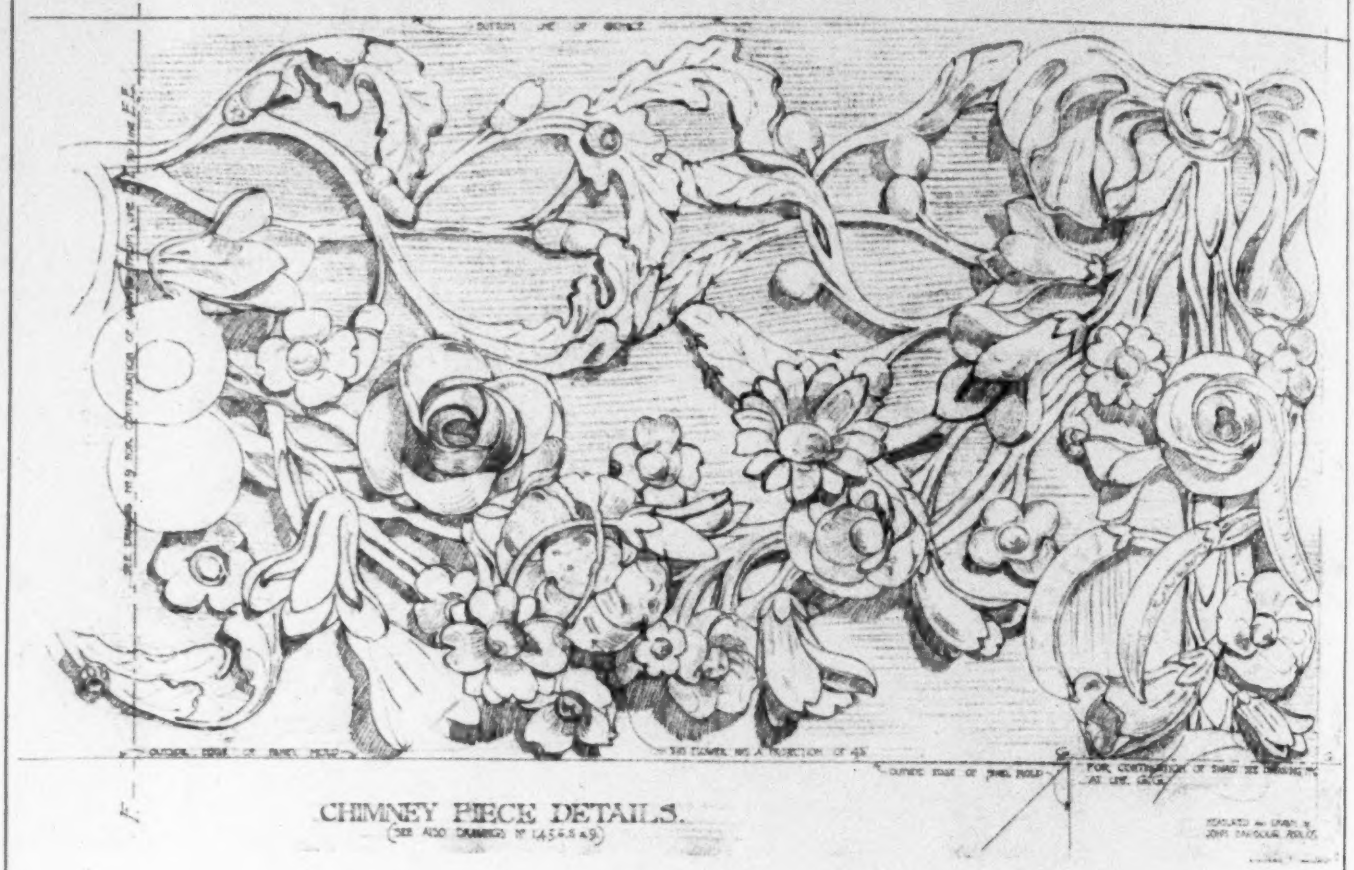
Nº3 CLIFFORD'S INN.

Drawing Nº 7.

DETAILS OF PANELLED ROOM



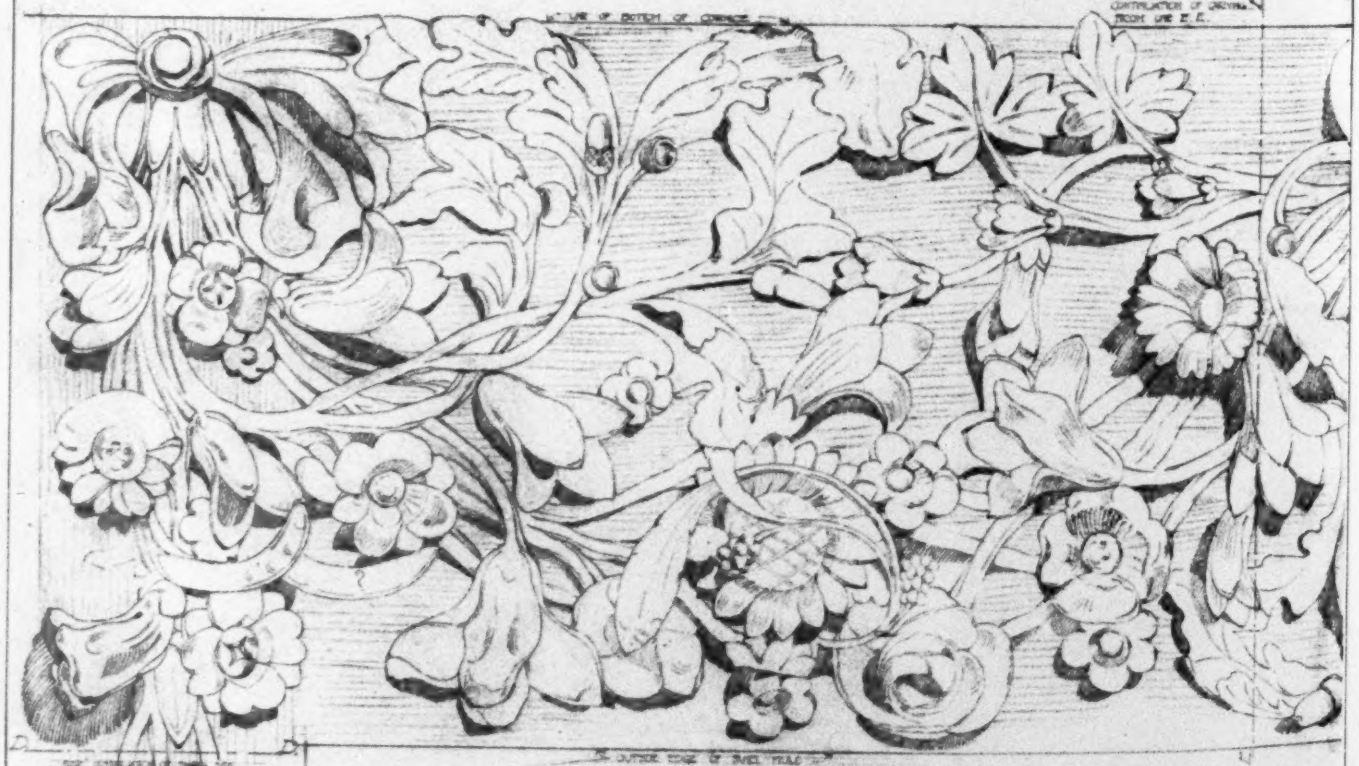
CHIMNEY PIECE DETAILS.

(SEE ALSO DRAWINGS Nº 1,4,5 & 9)

Nº3 CLIFFORD'S INN.

Drawing Nº 8.

DETAILS OF PANELLED ROOM.



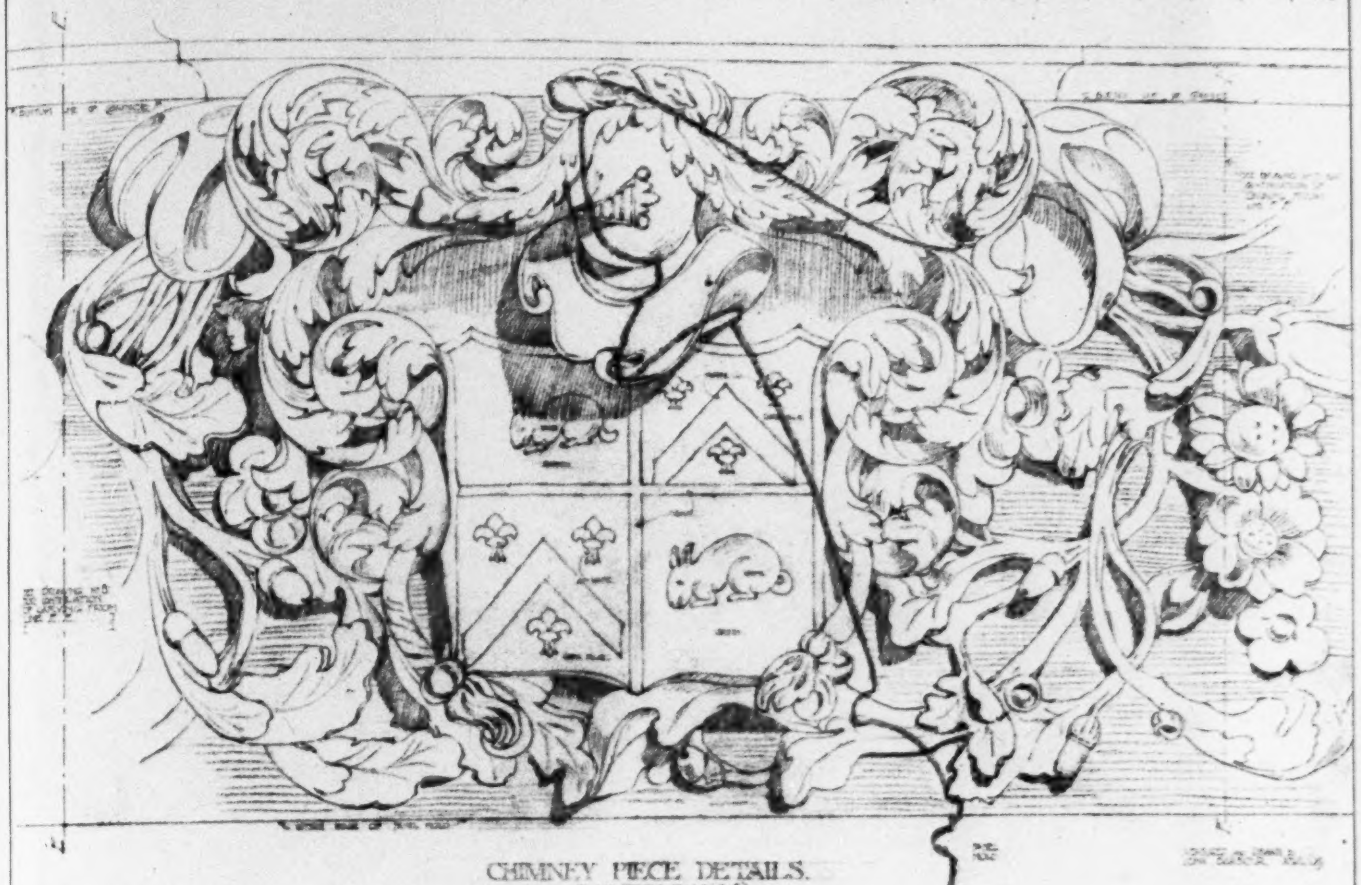
CHIMNEY PIECE DETAILS.

INK-PHOTO: SPRAGUE & Cº Ltº 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

Nº 3 CLIFFORD'S INN.

Drawing N° 9

Details of Panelled Room.

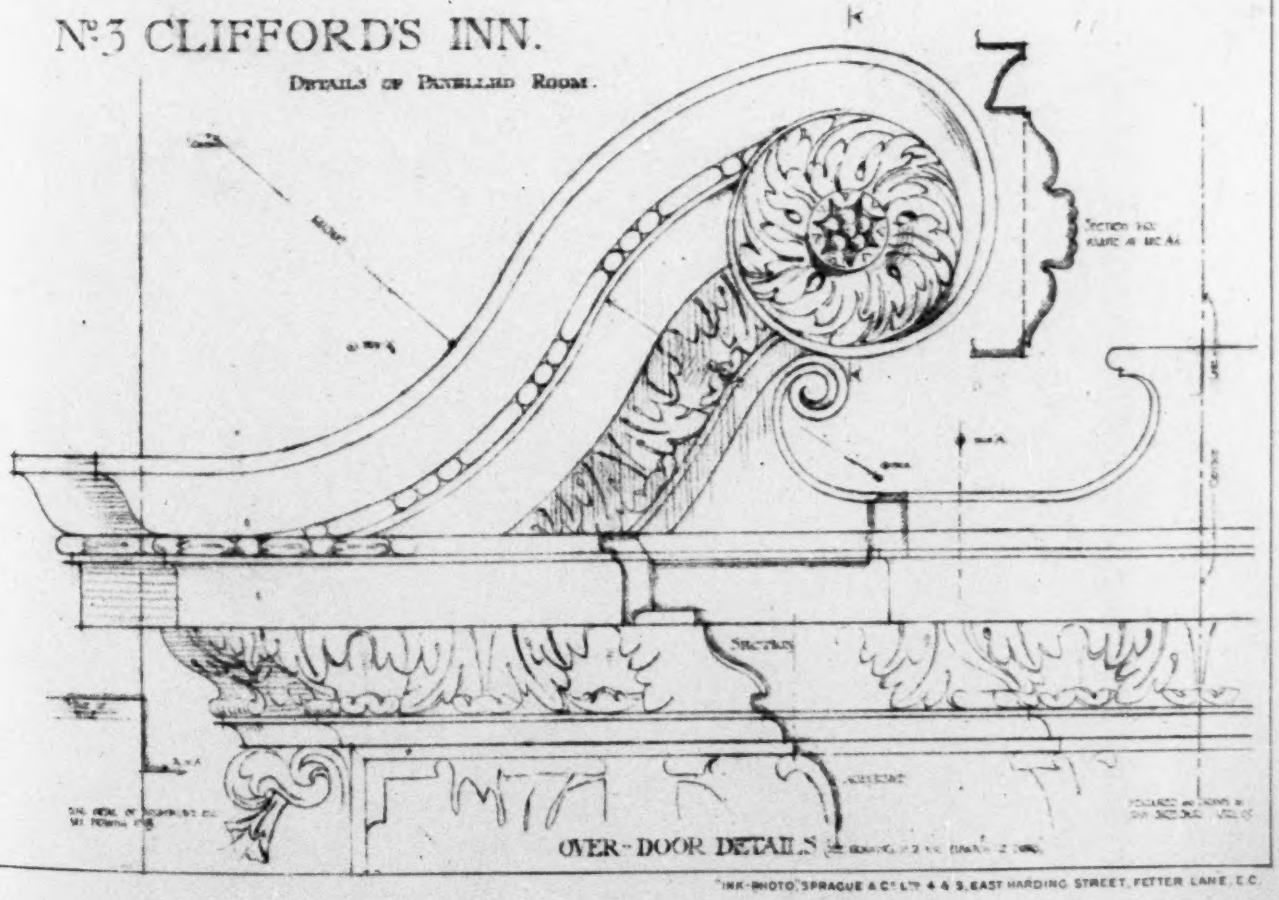


CHIMNEY PIECE DETAILS.

Drawing N° 10

Nº 3 CLIFFORD'S INN.

Details of Panelled Room.



OVER-DOOR DETAILS.

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COMPETITIONS.

HOLY TRINITY CHURCH, FAILSWORTH, NEAR MANCHESTER.—In the competition for the new church of Holy Trinity, Failsworth, recently decided, the designs of Mr. Frank Freeman, architect, of Bolton, have been selected by the assessor and committee, and he has been appointed architect for the work.

BRANCH LIBRARY FOR GREENWICH.—The Libraries Committee of Greenwich Borough Council reported on Tuesday that the Assessor, Mr. A. W. S. Cross, F.R.I.B.A., had submitted to them the conditions of the competition for designs for a branch library to be erected on the site of Bexley House. The conditions had been adopted, and directions had been given for designs to be invited.

BOOKS RECEIVED.

CEMENT AND CONCRETE. By Louis Carlton Sabin, B.S., C.E. (Archibald Constable & Co. 21s.)

WAVERLEY ABBEY. By Harold Brakspear, F.S.A. (Surrey Archæological Society: Guildford.)

STANDARD STEEL CONSTRUCTION, for the use of Architects, Engineers, and Contractors. Compiled by Hall & Pickles, Iron and Steel Merchants. (Sherratt & Hughes. 10s. 6d.)

TRADE CATALOGUES.

WE have received from Messrs. Verity's, Limited, of Hardman-street, Manchester, their catalogue No. 514, giving full particulars of many types of arc lamps, both "open" and "enclosed," and suitable for either direct or alternating current circuits. Their lamps are well known, and visitors to the Electrical Exhibition at Olympia will have an opportunity of judging their merits, as they are used for lighting the exhibition. The prices are moderate, and both single and double enclosure lamps are listed. Users of arc lamps would do well to write for the catalogue.

The Easton Lift Company send us their catalogue of electric and hydraulic lifts for various duties, attention being directed chiefly to those of the former class. Two general systems of control for electric lifts are described in this catalogue. The first of these includes three different forms: hand-rope control, car-switch control, and variable-speed control. The second is the very convenient push-button system for low and high speed passenger lifts and for service lifts in hotels and other buildings. Some useful notes, with detail drawings, are given relative to electric gears, various forms of guides, and upon hydraulic lifts of the direct-acting and suspended types. It is worthy of note that this firm were early in the field with an improved type of valve, on the Luthy principle, both for high and low pressure hydraulic lifts.

Messrs. G. B. Smith & Co., of Craighall Iron Works, Glasgow, send us their illustrated price list of iron fencing, railings, gates, and structural steelwork. The greater part of the book is occupied by particulars of the three first classes of product, while the latter portion refers principally to roofing materials, steel roofs, and buildings. It includes also several views of steel and cast-iron bridges, which, although doubtless of excellent construction, are sad examples of design from the æsthetic standpoint.

Mr. L. G. Monchel sends us a well-written and admirably-illustrated book of 175 pages, entitled "The Hennebique Ferro-Concrete System," for which he is the general agent for Great Britain. A good deal that is said in this book as to the advantages of reinforced concrete naturally applies with equal force to methods of construction other than those in which the writer is directly interested. We refer here to the resistance of the combined material to fire and damp, to its strength, cleanliness, and general convenience in structural work of all kinds. Of course, the Hennebique system possesses distinct characteristics which are clearly explained and illustrated by reproductions of line drawings. The methods of design adopted are clearly in accordance with correct principles, and an important feature is that adequate provision is invariably made for the resistance of shearing stresses, the importance of which is insufficiently recognised in some other systems. One great recommendation of the Hennebique system is to be found in the enormous number of works executed in all parts of the world which remain as practical proofs of the reliability of this particular method of construction. The greater part of the present book is filled with drawings and photographic views of buildings, bridges, reservoirs, quays, retaining walls, piers, aqueducts, and other structures, and at the end reports of several official tests are given in full. The volume is one that ought to find a place on the bookshelf of every architect and consulting engineer.

Correspondence.

RAILWAY TERMINUS PLATFORMS.

SIR,—Should not *all* railway terminus platforms be constructed with some impervious material? I frequently alight in the morning at a well-known terminus near the west-end of London, and detect strong smells of fish and other effluvia arising from certain platforms. This, no doubt, is caused by the unloading and depositing on the platform of fish and other commodities from railway-trucks. The platforms appear to be washed over with water, as a cleansing agent, which only helps to make things worse, as the wood becomes saturated with moisture, and therefore spongy, so that the drainings from the next consignment of the same goods easily penetrates the wood, and the evil is thus perpetuated.

I notice one of the platforms is covered with York flagstones. Why not all?

SANITARIAN.

LONDON BUILDING ACTS AMENDMENT BILL.

THE Works and General Purposes Committee of Hackney Borough Council reported on Tuesday having had before them a letter from the London County Council stating that, with the view of introducing next session another Bill to amend the London Building Acts, they would be glad to receive suggestions as to the proposed measure. The Committee, having considered the communication and also a report thereon by the borough surveyor, reported that the points to which they desired to call the attention of the Building Committee of the London County Council were twenty-two in number, and were as follow:—

"(1) A more extended definition of the word "inhabited," so as to include rooms used as living rooms or workrooms, and for the expression, "used for human habitation," to include such rooms.

(2) To secure a definition of the words, "in any direction," in sect. 13, of the Act of 1894, so as to prevent the re-erection of buildings within the prescribed distance, to a greater height than the height of the old buildings.

(3) To provide for an appeal from the certificate of the district surveyor under sect. 13, subsect. 5, of the Act of 1894, in reference to existing buildings within the prescribed distance.

(4) To require plans of existing buildings erected beyond the "general line," to be prepared and certified before the alteration or re-erection of any such buildings; and to prohibit altered or re-erected buildings so far as they are beyond such "general line," of greater height than the previously existing buildings.

(5) To require attested copies of all plans certified by the district surveyors, to be deposited with the local authorities, who, in case of dissatisfaction with such certificate, should have a right of appeal to the Tribunal of Appeal.

(6) To exempt buildings belonging to borough councils from the provisions of the Building Acts, if buildings belonging to the London County Council are to be exempted.

(7) To prevent the formation of undesirable "back passages."

(8) To amend the provisions as to "space at rear of domestic buildings," so as to require an open space to exist at the rear of all such buildings above the level of the adjoining pavement in streets laid out before the commencement of the Act of 1894.

(9) To secure a greater minimum depth than 10 ft. of space at the rear of all domestic buildings, it being suggested that the depth should be a graduated depth, increasing with the distance of the buildings from the centre of London, excepting in the cases of main roads; provision to be made for the suspension of this suggestion in the cases of roads and estates laid out and in course of development previously to the passing of the amendment.

(10) To prohibit encroachments on open spaces at the rear of buildings which would make them less than the minimum allowed under the Act.

(11) To prevent buildings being erected at the rear of domestic buildings without the necessary provision being made as regards open space, as required in the case of domestic buildings.

(12) To prevent the erection of buildings at a greater height than the width of the street, in streets laid out before 1862.

(13) To empower local authorities to alter the levels of unfenced forecourts, remove obstructions therefrom, and pave the same as part of the adjoining footpaths.

(14) To prohibit the erection of irregular temporary structures, such as sign boards, show-cases, etc., on forecourts, without the consent in writing of the local authority.

(15) To prohibit the erection of projecting advertisement signs and other like structures, without the consent of the local authority.

(16) To prohibit the erection of buildings with "ground story" habitable rooms below the level of the adjoining pavement.

(17) To require habitable rooms erected over stables to be separated horizontally by solid concrete partitions, and the staircases to such rooms to be approached directly from the outside air.

(18) To require land adjoining public streets to be fenced to the satisfaction of the local authority.

(19) To transfer to the local authorities the supervision of the construction and inspection of street boxes, underground conveniences, etc., and to exempt payment of fees to district surveyors in respect to such structures.

(20) To transfer to the local authorities the remaining powers under part 7 of the Act of 1894, having reference to "iron buildings" and "temporary iron or other buildings" or "structures," so as to remove the confusion which now exists with reference to the provisions of sect. 84.

(21) To secure that all future new streets shall be of a minimum width of 42 ft. in lieu of the present minimum width of 40 ft.

(22) The committee are of opinion that either in a Building Amendment Act, or otherwise in some Metropolitan Management Amendment or General Powers Act, powers should be given to metropolitan borough councils to enable them to compulsorily acquire any properties which may be needed for future purposes, in addition to those which may be wanted for street widenings or improvements."

COURT OF COMMON COUNCIL.

THE Lord Mayor presided on Tuesday at a meeting of the Court of Common Council, held at the Guildhall.

Blackfriars Bridge.—A letter was read from the Clerk of the London County Council, relative to the decision of the Council to introduce into Parliament, in the session of 1906, the legislative proposals embodied in the London County Council (Tramways) Bill, 1905; and inviting the Corporation to also introduce a Bill next session for the purpose of either widening or rebuilding Blackfriars Bridge, and expressing the hope that the Corporation may see its way to confer with the Council upon the whole subject.—After some discussion it was decided to refer the matter to the Bridge House Estates Committee.

The Old Bailey.—Mr. Cooper asked the Chairman of the City Lands Committee, by whose instruction an inscription had been placed over the portals of the New Sessions House.—Mr. Ellis requested that notice of the question should be given.

Thames Barrage.—The Special Port of London Committee's report recommending that a recommendation should be made to the Government in favour of the appointment of a Commission or Department Committee to inquire into the proposal to construct a barrage across the Thames at Gravesend was adjourned.

The Student's Column.

STEAM BOILERS AND PIPES.—XIII.

CHIMNEYS (*continued*).

HAVING dealt sufficiently with head, or draught power, we will now discuss its influence upon the entering air and hot gases in a chimney.

Velocity or Draught.—The velocity or draught imparted by the head to the cold air entering the furnace at the foot of a chimney, and to the hot gases passing through the chimney itself, is governed by the fundamental formula

$$v = \sqrt{2gh} \quad \ldots\ldots \quad (13)$$

where v = velocity in feet per second; g = the accelleration due to gravity = 32·2 ft.; and h = head in feet of air.

The velocity of the chimney gases is governed by the same formula, with the addition of a factor (a) representing the ratio of the cold air to the heated air or gases.

Thus, for the velocity of the chimney gases we have

$$v = \sqrt{2gh}\,(a) \quad \ldots\ldots \quad (14)$$

If no friction or other losses occurred (1) at the inlet or (2) in the furnace and flues, and in the chimney itself, the velocity of the entering air would be exactly as given by formula (13), and the velocity of the hot gases as given by formula (14).

Consequently the velocities so calculated are usually termed *theoretical velocities*.

Formula (13) can be adapted for calculating the theoretical velocity of the cold air by substituting the expression for h contained in formula (7), p. 326.

Then, denoting the velocity by the symbol (V) for the sake of distinction, we have

$$V = \sqrt{2g\left(H\,\frac{D-d}{D}\right)} \quad \ldots\ldots \quad (15)$$

Example (6).—Required the velocity of the cold air entering the furnace at the foot of a chimney 100 ft. high, the temperature of the air and gases being 62 deg. and 585 deg. respectively.

The weights per cubic foot of the air and chimney gases, as calculated on p. 326, are 0·0761 lb. and 0·03805 lb. respectively.

By formula (15) we get

$$V = \sqrt{64{\cdot}4\left(100\,\frac{0{\cdot}0761 - 0{\cdot}03805}{0{\cdot}0761}\right)}$$

$$= \sqrt{64{\cdot}4 \times 50} = 56{\cdot}7 \text{ ft. per second.}$$

During its passage through the fire the air enters into combination with various constituents of the fuel, but the volume of the resulting gases is practically equal to that of air at the same temperature.

To calculate the theoretical velocity of the hot gases, we substitute in formula (14) the value of h given by formula (7), and for the factor a the ratio of the densities of the cold air and the hot gases.

Denoting the velocity of the hot gases by the symbol (v), we have

$$v = \sqrt{2g\left(H\,\frac{D - d}{D}\right)\left(\frac{D}{d}\right)} \quad \ldots (16)$$

Example (7).—For the chimney in example (6) the theoretical velocity is :—

$$v = \sqrt{64{\cdot}4\left(100\,\frac{0{\cdot}0761 - 0{\cdot}03805}{0{\cdot}0761}\right)\left(\frac{0{\cdot}0761}{0{\cdot}03805}\right)}$$

$$= \sqrt{64{\cdot}4 \times 50}\,(2) = 113{\cdot}4 \text{ ft. per second.}$$

In cases where the theoretical velocity of the cold air has already been calculated, the corresponding velocity of the chimney gases can be ascertained by the simple rule

$$v = V\left(\frac{D}{d}\right) \quad \ldots\ldots (17)$$

From formulæ (15) and (16) it is evident that the theoretical velocities of the cold air and hot gases are proportional to the square root of the head, or, in other words, to the square root of the height of the chimney and to the square root of the ratio $\left(\frac{D - d}{D}\right)$.

Table XIX., calculated by formula (7), gives the head (h) in feet of air for chimneys of various heights and containing gases at some of the temperatures most frequently obtaining in practice. It will be observed that at the temperature of 585 deg. F. the head is exactly half the height of the chimney.

By the use of this table calculations are considerably simplified, if the proper values of (h) be substituted in formulæ (13) and (14), as in the following example :—

Example (8).—For the chimney in example (6) the head is 50 ft. of air.

Then the velocity of the cold air by formula (13) is

$$V = \sqrt{2g\,50}$$

$$= \sqrt{64{\cdot}4 \times 50} = 56{\cdot}7 \text{ ft. per second.}$$

The velocity of the hot gases is given by formula (14) after substitution of the value already found for the ratio $a = \left(\frac{D}{d}\right)$.

$$v = \sqrt{2g\,50}\,(a)$$

$$= \sqrt{64{\cdot}4 \times 50}\,2) = 113{\cdot}4 \text{ ft. per second.}$$

To calculate the velocity of the air and gases when the head is expressed in inches of water modifications of formulæ (13) and (14) can be employed, in which $2g$ is divided by the conversion factor 0·01466.

For the velocity of the cold air

$$V = \sqrt{(2g \div 0{\cdot}01466)\,h_2} \quad \ldots\ldots (18)$$

For the velocity of the hot gases

$$v = \sqrt{(2g \div 0{\cdot}01466)\,h_2}\left(\frac{D}{d}\right) \quad (19)$$

Table XX., calculated by formula (9), *ante*, gives values of (h_2) for chimneys of various heights and containing gases at different temperatures. The use of this table is shown by the following examples :—

Example (9).—For the chimney in example (6) the head is 0·733 in. Substituting this value in formula (18), we get for the velocity of the cold air

$V = \sqrt{(64{\cdot}4 \div 0{\cdot}01466)\,0{\cdot}733} = 56{\cdot}7$ ft. per sec., and by formula (19) we find the velocity of the hot gases to be

$v = \sqrt{(64{\cdot}4 \div 0{\cdot}01466)\,0{\cdot}733}(2) = 113{\cdot}4$ ft. per sec.

By taking the value of $2g$ at 64 instead of 64·4 rules can be derived from formulæ (15) and (16) for approximate determinations of the theoretical velocity when the head is known.

When the head is expressed in feet of air, formulæ (15) and (16) reduce as follows :—

For the theoretical velocity of the cold air

$$V = 8\sqrt{h} \quad \ldots\ldots\ldots (20)$$

For the theoretical velocity of the hot gases

$$v = 8\sqrt{h}\left(\frac{D}{d}\right) \quad \ldots\ldots\ldots (21)$$

When the head is expressed in inches of water, the value of (h) must be divided by the factor 0·01466. Thus we obtain :—

For the theoretical velocity of the cold air

$$V = 66{\cdot}1\sqrt{h_2} \quad \ldots\ldots\ldots (22)$$

TABLE XIX.—HEAD IN FEET OF AIR FOR CHIMNEYS OF VARIOUS HEIGHTS AND CONTAINING GASES AT DIFFERENT TEMPERATURES, THE TEMPERATURE OF THE EXTERNAL AIR BEING 62 DEG. F.

Height of Chimney in Feet. (H)	Head (h) in Feet of Air.							
	350 deg.	400 deg.	450 deg.	500 deg.	550 deg.	585 deg.	600 deg.	650 deg.
10	3·5	3·9	4·2	4·5	4·8	5	5·0	5·2
20	7·1	7·8	8·5	9·1	9·6	10	10·1	10·5
30	10·6	11·7	12·7	13·6	14·4	15	15·2	15·8
40	14·2	15·7	17·0	18·2	19·3	20	20·2	21·1
50	17·7	19·6	21·2	22·7	24·1	25	25·3	26·4
60	21·3	23·5	25·5	27·3	28·9	30	30·4	31·7
70	24·8	27·4	29·8	31·9	33·7	35	35·4	37·0
80	28·4	31·4	34·0	36·4	38·6	40	40·5	42·3
90	31·9	35·3	38·3	41·0	43·3	45	45·6	47·6
100	35·5	39·2	42·5	45·5	48·2	50	50·7	52·9
120	42·6	47·1	51·0	54·7	57·9	60	60·8	63·5
140	49·7	54·9	59·6	63·8	67·5	70	71·0	74·1
160	56·8	62·8	68·1	72·9	77·2	80	81·1	84·6
180	63·9	70·6	76·6	82·0	86·9	90	91·2	95·2
200	71·0	78·5	85·1	91·1	96·5	100	101·4	105·8

TABLE XX.—HEAD IN INCHES OF WATER FOR CHIMNEYS OF VARIOUS HEIGHTS, AND CONTAINING GASES AT DIFFERENT TEMPERATURES, THE TEMPERATURE OF THE EXTERNAL AIR BEING 62 DEG. F.

Height of Chimney in Feet. (H)	Head (h) in Inches of Water.							
	350 deg.	400 deg.	450 deg.	500 deg.	550 deg.	585 deg.	600 deg.	650 deg.
10	0·052	0·057	0·062	0·066	0·070	0·073	0·074	0·077
20	0·108	0·115	0·124	0·133	0·141	0·146	0·148	0·155
30	0·156	0·172	0·187	0 200	0·212	0·219	0·223	0.232
40	0·208	0·230	0·249	0·267	0·283	0·293	0·297	0·310
50	0·260	0·287	0·312	0·334	0·353	0·366	0·371	0·387
60	0·312	0·345	0·374	0·400	0·424	0·439	0·446	0·465
70	0·364	0·402	0·436	0·467	0·495	0·512	0·520	0·543
80	0·416	0·460	0·499	0·524	0·566	0·586	0·594	0·620
90	0·468	0·518	0·561	0·601	0·636	0·659	0·669	0·698
100	0·520	0·575	0·624	0·668	0·707	0·733	0·743	0·775
120	0·624	0·690	0·749	0·801	0·849	0·879	0·891	0·930
140	0·728	0·805	0·873	0·935	0 990	1·026	1·040	1·086
160	0·832	0·920	0·998	1·069	1·132	1·172	1·189	1·241
180	0·937	1·036	1·123	1·202	1·273	1·319	1·338	1·396
200	1·088	1·151	1·248	1·336	1·415	1·466	1·486	1·550

TABLE XXI.—THEORETICAL VELOCITY OF THE COLD AIR ENTERING CHIMNEYS OF VARIOUS HEIGHTS AND CONTAINING GASES AT DIFFERENT TEMPERATURES, THE TEMPERATURE OF THE EXTERNAL AIR BEING 62 DEG. F.

Height of Chimney in Feet. (H)	Velocity (V) in Feet per Second.							
	350 deg.	400 deg.	450 deg.	500 deg.	550 deg.	585 deg.	600 deg.	650 deg.
10	15·1	15·9	16·5	17·1	17·6	17·9	18·0	18·4
20	21·3	22·4	23·4	24·2	24·9	25·3	25·5	26·1
30	26·1	27·5	28·6	29 6	30·5	31·0	31·3	31·9
40	30·2	31·8	33·1	34·2	35·2	35·8	36·1	36·9
50	33·8	35·5	37·0	38·3	39·4	40·1	40·4	41·2
60	37·0	38·9	40·5	41·9	43·1	43·9	44·2	45·2
70	40·1	42·0	43·8	45·3	46 6	47·4	47·8	48·8
80	42·7	44·9	46 8	48·4	49 8	50·7	51·1	52·2
90	45·3	47·6	49·6	51·4	52·8	53·8	54·2	55·3
100	47·8	50·2	52·3	54·1	55·7	56·7	57·1	58·3
120	52·3	55·0	57·3	59·3	61·0	62·1	62·5	63·9
140	56·5	59·4	61 9	64·1	65·9	67·1	67·6	69·0
160	60·4	63 6	66·2	68·5	70 5	71·7	72·2	73·8
180	64·1	67·4	70·2	72·7	74·8	76 1	76·6	78·3
200	67·6	71·1	74·0	76 6	78·8	80·2	80·8	82·5

TABLE XXII.—THEORETICAL VELOCITY OF THE HOT GASES IN CHIMNEYS OF VARIOUS HEIGHTS, AND CONTAINING GASES AT DIFFERENT TEMPERATURES, THE TEMPERATURE OF THE EXTERNAL AIR BEING 62 DEG. F.

Height of Chimney in Feet. (H).	Velocity (v) in Feet per Second.							
	350 deg.	400 deg.	450 deg.	500 deg.	550 deg.	585 deg.	600 deg.	650 deg.
10	23·4	26·1	28·7	31·4	34·0	35·8	36·5	39·0
20	33·0	36·8	40·7	44·4	48·1	50 6	51 7	55·4
30	40·4	45·2	49·8	54·3	58·9	62 0	63·5	67·7
40	46·8	52·3	57·6	62·8	68·0	71·6	73 2	78·3
50	52·3	58·4	64·4	70·3	76·1	80 2	81·9	87·5
60	57·3	64 0	70·5	76 9	83·3	87·8	89·6	95·9
70	62·1	69·1	76·3	83 2	90·1	94·8	96 9	103 6
80	66·1	73·8	81·5	88·9	96·2	101·4	103·7	110·9
90	70·2	78·3	86·4	94·4	102·1	107·6	110·0	117·4
100	74·0	82·6	91·0	99·3	107·6	113·4	115·8	123 8
120	81·0	90·5	99 8	108 9	118·0	124·2	126 9	135 7
140	87·5	97·7	107·8	117 8	127·5	134·2	137·2	146·5
160	93·6	104·7	115·3	125·8	136·3	143·4	146·5	156·8
180	9 ·3	110·9	122·3	133·6	144·6	152·2	155·4	166·3
200	104·7	117·0	128·9	140·7	152·4	160·4	164·0	175·2

For the theoretical velocity of the hot gases

$$v = 66{\cdot}1\sqrt{h_2}\left(\frac{D}{d}\right) \quad \ldots\ldots (23)$$

Theoretical velocities of the cold air and hot gases for chimneys of different heights and with different values for $\frac{D-d}{D}$, and $\left(\frac{D-d}{D}\right)\left(\frac{D}{d}\right)$ are given in Tables XXI. and XXII., which have been calculated by formulæ (15) and (16).

The foregoing discussion shows that the head, or draught power of a chimney is directly proportional to the product of the height and the ratio $\frac{D-d}{D}$, but that the velocity is proportional to the square root of the same product.

Therefore, for any given value of the ratio $\frac{D-d}{D}$, the effect of increasing the height from 10 ft. to 100 ft. is to increase the head as $10 : 100 = 10$ times, while the velocity is only increased as $\sqrt{10} : \sqrt{100} = 3{\cdot}16$ times.

Similarly for a chimney of any given height the effect of increasing the value of the ratio $\frac{D-d}{D}$, from 0·35 to 0·5 is to increase the head as $0{\cdot}35 : 0{\cdot}5 = 1{\cdot}25$ times, whereas the velocity is increased as $\sqrt{0{\cdot}35} : \sqrt{0{\cdot}5} = 1{\cdot}18$ times.

Conversely, by reducing the height of a chimney and the temperature of the gases it contains, the effect upon the velocity is comparatively small as compared with that upon the head.

Comparison of Tables XIX. and XX. with Tables XXI. and XXII. will make clear the bearing of these facts upon the output of chimneys having different heights and employed to convey gases at different temperatures.

The actual velocity of flow in chimneys is a matter to which attention will be directed next week.

OBITUARY.

M. CHARLES LUCAS.—Many architects in London will share our regret at hearing of the death, at the age of 67, of M. Charles Lucas, who had more connexion with this country and with the work of the Institute of British Architects than any other Paris architect. M. Lucas was the pupil of Constant Dufeux and of the Ecole des Beaux-Arts. As Inspector of the Paris "Service Municipal d'Architecture" he was practically concerned in the carrying out of many important works, such as the Caserne de la Cité (now the Prefecture of Police), the Hotel of the central staff of Sapeurs et Pompiers, the church of St. Ambroise, the school in the Rue Rodier, and a number of other school buildings in Paris. He was the architect also of the Ecole Estienne, and he also carried out a good many interesting artistic restorations. It was M. Lucas who started the course of History of Art at the Ecole Boulle, where he was professor; and he was incessantly active in the affairs of the Société Centrale des Architectes and of the "Caisse de Défense Mutuelle," of which he was the general secretary. He was also a member of the Conseil Departmental des Habitations à Bon Marché, and of the Society of Civil Engineers of France; and he was connected with various foreign societies, to all of which he gave important assistance. M. Lucas was an admirable lecturer both in regard to style and elocution, and made numerous studies on subjects of architecture, archæology, and artistic property, on which latter subject he had a good deal of special knowledge. Among his essays may be cited "Architecture à travers les Ages"; "L'Habitation à Toutes les Epoques"; "L'Architecture au Temps d'Homère"; "Le Palais d'Ulysse à Ithaque," etc. His co-operation in connexion with the question of artisans' dwellings was especially valuable in consequence of his detailed knowledge of the structural and practical details bearing on this class of work. M. Lucas was a man of (to all appearance) robust physical health, and certainly of untiring energy; he seemed never to have too much work; and among the instances of this is the fact that for some years back, in spite of the active part which he always took in the proceedings of the Annual Conference of French architects, he found time to write for us the reports of the Conferences which appeared in our columns. M. Lucas was a man of most genial manners, who gave one the impression of being always busy and always in a good humour. He will be missed by many of his English as well as his French professional brethren.

MR. BINYON.—The death, on September 21, at Fairholme, Grange-road, Bushey, is announced of Mr. Brightwen Binyon, aged fifty-nine years. Mr. Binyon, F.S.A., was elected in 1872 an Associate of the Royal Institute of British Architects. He was a son of Edward Binyon, a sugar refiner and tea dealer, of Manchester, and a member of the Society of Friends. On leaving the Quakers' School at Kendal he, in 1863, became a pupil of Alfred Waterhouse, with whom he remained until 1871, when he left England for a tour on the Continent and in Egypt and Palestine. Upon his return he settled in Ipswich, where he carried on an extensive practice during twenty-six years. By reason of ill-health he was compelled to retire from the profession, and transferred his practice as from December 1, 1897, to his former assistant, Mr. George H. Burgess, of the present firm of Messrs. Brown & Burgess, of Ipswich. Mr. Binyon won the first premium in each of the following competitions:—Sunderland Town Hall, on the award of Alfred Waterhouse (illustrated in the *Builder* of May 21, 1887, drawing and two plans); Swindon New Town Public Offices, with provision for the addition of a large public hall (*Builder*, April 27, 1889); Folkestone Public Library, Ipswich Corn Exchange, after the Italian Renaissance manner, 1880-2; the concert pavilion, with winter garden, beach bathing houses, etc., on the new promenade for the Spa and Winter Garden Company, Felixstowe, 1897; and many public elementary schools for the Swindon School Board. He was architect of the Public Library in West Stockwell-street, Colchester, designed somewhat after the Jacobean style, and opened in October, 1894; the lecture hall for the Young Women's Christian Association premises, and (in an honorary capacity) the Nethaniah Home for the Aged in Luther-road, Ipswich; Burlington Baptist Chapel, Ipswich; his own residence, together with several seaside houses at Felixstowe; and a mansion at Wonham, North Devon, for Mr. J. R. Holland, at one time M.P. for Brighton. Of his other works we may mention the Barrett-Browning memorial at Ledbury; "The Grove," and the alteration and enlargement of "The Hall" for Mr. W. K. D'Arcy, at Stanmore, where, fifteen years ago, he was employed in developing the Stanmore Park Estate. Mr. Binyon was an able decorative artist, and during the early part of his career designed largely for Messrs. Jeffery & Co. and for Mr. Henry Capel, late of Great Titchfield-street, London, for whom he designed the furniture for the "Serapis" for the King, when, as Prince of Wales, he visited India. He also designed needlework or furniture for the Queen, the Empress of Russia, Princess Christian, the Duchess of Edinburgh, the Countess of Carnarvon, Lord Frederick Cavendish, Lord Selborne, Sir Roundel Palmer, and for many other distinguished persons. He was a very rapid and persistent sketcher; a series of ten small sketch books, filled principally during his eastern tour, are, for truthfulness and architectural accuracy of detail, as well as for their artistic merit, most interesting and instructive. Owing to failing health, he retired from the profession in 1897, when his practice was continued by his first pupil (Mr. Frank Brown) and Mr. Burgess, who had been associated with him for many years.

MR. LUFF.—We have to announce the death, on September 20, at Audley House, Great Gransden, of Mr. George Henry Luff, aged sixty-three years, of 64, Chapel-street, Devonport. Mr. Luff was elected in 1864 an Associate and in 1901 a Fellow of the Royal Institute of British Architects. He was Chairman of the Three-Towns branch of the Devon and Exeter Architectural Society in 1899-1901, and President of that Society for the session of 1901-2; he was elected one of the representative members of allied societies, Royal Institute, for 1902-3. Of Mr. Luff's architectural works, we may mention the branch at Keyham of the Union Savings Bank, Devonport; the enlargement and improvement of the workhouse infirmary at Stoke Damerel for the Union Guardians (1898); the parochial offices for the Union at Camel's Head, Devonport; and, in the course of last year, the extensive alterations, together with a new wing, of the Morice Town Council Schools for the Education Committee, Devonport. He was the architect of many private houses and similar buildings in that town and in the vicinity.

GENERAL BUILDING NEWS.

ROMAN CATHOLIC CHURCH, TYNE DOCK.—On the 23rd inst. the foundation-stone of a new Roman Catholic church was laid at Tyne Dock. The building is to be erected on the site adjoining the Presbytery in Belle Vue Terrace, and will be 100 ft. in length and 52 ft. broad. Accrington pressed bricks are being used, and there will be stone facings. The style will be Romanesque, and accommodation will be provided for 600 worshippers. The nave will be separated from the two aisles by circular arches, supported on stone columns, and the roof, which is to be of pitch-pine, will be barrel-shaped. Two side chapels, organ gallery, sanctuary and sacristy are to be included in the building. The architects are Messrs. Broderick, Lowther, & Walker, Hull, and Mr. James Young, Tyne Dock, is the contractor.

WESLEYAN CHAPEL, ULROME, NEAR BRIDLINGTON.—A new Wesleyan church has been opened at Ulrome. It was designed by Mr. S. Dyer, architect, Bridlington, and built by Mr. F. Postill, contractor, Bridlington, and will accommodate seated 150 people, while the adjoining schoolroom (connected to the chapel by a sliding door) will provide accommodation on special occasions for 100 extra.

BAPTIST CHAPEL, HADDENHAM.—A new Baptist chapel was recently opened at Haddenham. It has been erected from plans by Messrs. John Wells & Sons, of Derby and London, and the design is late English Gothic. The walls are faced with red bricks, with Bath stone dressings to the doorways, windows, spire, etc. The internal joinery is of pitch-pine, and the windows are glazed with cathedral-leaded lights of suitable design. There is hot-water apparatus, and ventilation on the "natural" system. The total accommodation is for 339 adults, or a mixed congregation of 450. Most of the seating accommodation is on the ground floor, but there is also a small gallery at the front end. The choir and organ are accommodated in the south transept. Mr. H. Feast, of Haddenham, was the builder. The total outlay involved was about 3,200*l.*

TRUANT SCHOOL, SHETTLESTON, N.B.—The new truant school for boys which has been erected at Shettleston for the School Board of Glasgow was opened on the 21st inst. by the Marquis of Linlithgow. It has been built from plans prepared by Mr. Andrew Balfour, architect, Glasgow. Its external style is English Renaissance, and in plan the school comprises a four-sided group of buildings 230 ft. square, with a play and drill ground. There are dormitories for 150 boys, with classrooms, tailors' workshop, shoemakers' workshop, needle-room, laundry, and manual instruction-room, teachers' dining and sitting rooms, dining-hall for boys, and a small hospital section, with nurses' rooms, etc.

PUBLIC SCHOOL, DRUMCHAPEL, N.B.—The new Drumchapel Public School, which has been erected by the New Kilpatrick School Board on a site on Cowdenhill Estate, was recently opened. The building has been erected from plans by Mr. D. Macnaughtan, architect, Glasgow, and has at present accommodation for 200, capable of being extended by the erection of wings to 400.

ARCHBISHOP HOLGATE'S GRAMMAR SCHOOL, YORK.—Additions are being made to this school. The scheme is estimated to cost between 7,000*l.* to 8,000*l.* It is being carried out from designs by Mr. W. H. Brierley, architect, of York, by Mr. Ullathorne, contractor, of Selby. There are to be new dormitories for boarders, chemical and physical laboratories, art room, and lecture hall accommodating seventy-five students, and these apartments will be approached by a wide staircase leading from where the old laundries were. The main schoolroom will be at the rear of the present principal schoolroom, and will face south, and there are to be eight new classrooms alongside the main school, affording accommodation for 220 boys. The present main school will be divided into two classrooms, and its present front will be taken out and rebuilt with new windows. The central hall system is to be adopted in the extension scheme. There will be a new laundry, a workshop, and a dressing-room fitted with shower and other baths. All the rooms will be supported on steel girders, and have fireproof ceilings and wooden block floors.

GRAMMAR SCHOOL, NEWCASTLE.—The foundation-stone of the new Royal Grammar School in Newcastle was laid on the 28th inst. The site of the new school is in the Brandling-fields, between Eskdale-terrace and Brandling-park, and comprises an area of about 10 acres. The approach is from Eskdale-terrace, on which is the principal front to the buildings. These are laid out from north to south, having the school in the centre, and the science and gymnasium blocks at either end, with the changing rooms between these and the central block, the whole being connected by covered ways. The headmaster's and secretary's rooms are off the entrance-hall, which opens into the large school-hall, round which are grouped on three sides the classrooms, those on the first floor being entered from the gallery of the hall. From either side of the school-hall covered ways lead to the senior and junior boys' changing-rooms, lavatories, etc., which are in separate blocks, also approached from the boys' entrances in Eskdale-terrace and the playing-fields. The covered ways continue through these blocks to the science-school on the north, and to the gymnasium and dining-hall on the south. The buildings are of Windy Nook stone and Leicestershire red brick, with fireproof floors, and the design is Renaissance. The architects are Messrs. Russell & Cooper, London; the builders being Messrs. Arnold & Son, Doncaster; and the clerk of works Mr. J. Holden. The contract for the buildings amounts to nearly 22,000*l.*

GRAMMAR SCHOOL, AMERSHAM.—The new premises of the Amersham Grammar School were opened on the 21st inst. They consist of an assembly hall, 27 ft. 6 in. by 22 ft. 4½ in., which

will also be used as an art-room; three class-rooms, each 16 ft. 6 in. by 22 ft. wide; a chemical laboratory, 31 ft. 3 in. by 23 ft. wide; a lecture-room, 22 ft. by 22 ft.; a dining-room, 22 ft. by 20 ft.; and a common-room, 14 ft. by 10 ft. There are separate entrances for boys and girls, accommodation for cloaks, changing-rooms, and offices. The various rooms are connected by a main corridor, 6 ft. 6 in. wide. The chief rooms have a direct northern light. The laboratory and lecture hall have been fitted up by Messrs. F. E. Becker & Co., and the same firm have also supplied the desks, etc. Ventilation has been secured by means of fresh-air inlets and exhaust cowls, and this work has been undertaken by Mr. Wilkinson. The heating has been carried out by Messrs. Hendry & Pattisson, of London, Boyd's hygiastic warm-air stoves being used throughout the building. The boys' latrines are distinct from the main building. The master's house contains entrance hall, drawing and dining-room, study and kitchen, and the usual offices. A butlery or serving-room connects the kitchen with the dining-room of the school. The first floor contains six bedrooms and one box-room, bathroom, and lavatory, etc. The school internally is coloured throughout. The walls are built of brick, and rough cast externally, and the roofs covered with Somerset tiling. The contract for the whole building amounts to 5,268*l*. The accommodation is for forty boys and twenty girls. The contractor was Mr. George Darlington and the architect Mr. H. Belch.

CITY SCHOOL OF ART, GREAT HORTON-ROAD, BRADFORD.—This building was opened by the Marquis of Londonderry, President of the Board of Education, on Wednesday, September 27. The accommodation for the School of Art in the Municipal Technical College having proved insufficient for proper teaching and administration, and the space being also required for the extension of other departments, new quarters have been adapted out of the old Mannville Chapel and school buildings, which were purchased by the City Council in 1904 for the purpose. The new school is situated immediately opposite the Technical College in Great Horton-road, and thus forms one of a group of higher educational buildings under the Education Committee of the Corporation. With increased room available, arrangements have been made whereby the art classes, formerly held at the Mechanics' Institute and the Church Institute, have been discontinued and included in the School of Art, so that the whole of the advanced art teaching of the city is now concentrated in the new school, under the direction of the Principal, Mr. C. Stephenson, A.R.C.A. The original chapel and school buildings were erected in 1879, at a cost (including land) of about 22,000*l*., from designs by Messrs. Hill & Swann, of Leeds, and while the exterior appearance is practically unaffected, the whole of the interior has been re-planned and reconstructed to meet the altered requirements. The old galleries in the chapel have been removed, and an additional floor put into the main building, which gives two suites of classrooms adapted for art teaching purposes. The lighting of these rooms, both naturally and artificially, has been the subject of special attention, and is now considered to be quite satisfactory. The entrance for students is in the centre of the main building, so that all ingress and egress is under the observation of the person in charge of the time office, which adjoins the main entrance hall. The side entrance in Mannville-terrace is reserved for the use of the teaching staff, the old vestries being adapted as retiring-rooms for their use. An entrance from the yard is also retained for material. Suites of well-lighted and ventilated conveniences are provided for both sexes, and there is a carefaker's residence on the lower ground floor under the main building. A new heating installation has been provided on the low-pressure hot water system, with ventilating radiators, and special arrangements in the life rooms for heating the models' thrones both in winter and summer. A complete system of mechanical ventilation has been arranged with two electric propellers, by means of which the air in all the rooms can be frequently changed. The whole building has been rewired for electric lighting, each room being treated in accordance with its special uses or requirements. The purchase of the old buildings and site cost 10,000*l*., and the amount expended on the alterations and furnishing is 4,390*l*. The work was commenced in the main building on January 15 last, and on the school portion on April 25. The contractors for the mason's and bricklayer's work are Messrs. Michael Booth & Sons; carpenters and joiners, Messrs. J. Moulson & Son, Ltd.; plasterers, Mr. G. W. Callaway; plumbers, Messrs. A. Higginbotham & Sons; painters, Messrs. Hartley & Southwart; electric lighting, Messrs. Collinson Bros.; heating apparatus, Messrs. R. Dawson & Co., Ltd., Stalybridge; ventilation, The Sun Fan Co., Ltd. The contractors for fittings and furniture are Messrs. E. Archer & Son, Mr. W. Thirkill, Mr. G. Jackson, and Messrs. Brown, Muff, & Co. The whole of the work has been carried out from the plans and under the superintendence of Mr. F. E. P. Edwards, City Architect, and the clerk of the works is Mr. W. J. Forrest.

HEREFORD NEW SCHOOL.—This block of buildings was opened by the Mayor on Friday, the 22nd inst. The school, which was won in competition by Mr. Noel Barker (of the firm of Messrs. Lingen, Barker, & Son, of London and Bristol), has been carried out under the personal supervision of the architect. The plan, which is on the central hall system, provides accommodation for 400 boys; ultimately two other schools for girls and infants are to be built. The architect has adopted means for securing sunny classrooms (seven in number), and left lighting for the scholars, and arranged that all the classrooms are entered from the central hall and are under the direct supervision of the head teacher, he being enabled to see from his desk into every classroom by means of "inspection" windows. A head teacher's room in proximity to his desk in the central hall, and an assistant teacher's room, with storerooms to each, has been provided. There are two principal entrances and an emergency exit at the further end, which also communicates with the head teacher's room. Four of the classrooms are separated by Stone's patent folding partitions. The ventilation is on the "natural system." A golden-brown glazed brick dado is put everywhere, the walls above where not "black board" surface, being "adamant," with blue distemper. The flooring is of pitch pine wood blocks, except in the corridors, which are granolithic. The building is of local red brick and faced with pressed brick, and relieved with buff terra-cotta bands, the dressings being also of terra-cotta. The roof is covered with brindled Broseley tiles. A thorough system of low pressure heating has been supplied, the contract being let to Messrs. King & Co., of Liverpool. The sanitary fittings have been supplied by Messrs. Twyfords & Co. The builders were Messrs. Wilks & Son, of Hereford.

PARISH HALL, BEAUFORT.—On the 26th inst. the parish hall, which has been erected adjacent to the new parish church at Beaufort, was opened. The new hall provides sitting accommodation for 600, the cost being 900*l*. It was designed by Mr. Henry Walters, Beaufort, and the contractor was Mr. J. A. Davies, Beaufort.

HOSPITAL FOR WOMEN, BIRMINGHAM.—On the 20th inst., the buildings erected in Showell Green-lane, Sparkhill, for the Birmingham and Midland Hospital for Women, were opened. The hospital and grounds cover a sit 8,500 sq. yds. Nearest to the main road is a range of administrative buildings and nurses' home of two main stories, with an attic floor over. To the rear, and divided off by lawns and tennis-courts, are the wards for patients, forming two wings north and south of the connecting corridor and lift. The wings are two stories in height, and have as their main features four large wards, each containing ten beds. The upper wards have open balconies on three sides, and at the ends external iron staircases to the ground. There are also four small wards containing two beds each. Each block rests upon a basement of open arches. The walls are plastered with non-absorbent material tinted pale green, while the woodwork is enamelled white. Near the centre of the upper corridors are two sets of operating-rooms. The walls and ceiling have a surface of continuous washable material, and the ceiling is rounded. The new hospital is to accommodate nearly fifty patients, and the cost, including the site, is 45,000*l*. The builder was Mr. C. Gray Hill, of Coventry, Messrs. Martin & Martin being the architects.

FREE LIBRARY, STAPLEFORD.—A new public library is to be erected at Stapleford. The principal entrance is to be from Towle's-avenue, a vestibule being divided from the hall by folding-doors. The lending library will be directly opposite, and will be 22 ft. 6 in. by 23 ft. 9 in., giving a superficial area of 534 ft. The reading-room will be 56 ft. 6 in. by 14 ft., having an area of 798 ft., inclusive of the ladies' room. The latter will be divided from the general room by a wooden and glass partition, and will have accommodation for eight chairs and a newspaper stand for two or three papers. The general reading-room will have accommodation for fifteen daily papers, and forty chairs. To the right of the entrance-hall will be the reference library, which will be in direct communication with the lending library. It will be 22 ft. 4 in. by 14 ft. 3 in., having an area of 327 ft., and accommodation for twenty readers. There will also be librarian's rooms, storerooms, etc. The heating will be on the low-pressure hot-water pipe and radiator system, whilst the ventilation will be on Boyle's natural extract principle, the artificial lighting being by incandescent gas light. The plans have been prepared by Mr. R. Smith, architect, of Long Eaton, and the cost is estimated at 1,350*l*.

HOSPITAL, BURY.—The new hospital which has been erected at the Bury Union Workhouse was opened a short time ago. The buildings, which consist of two pavilions and an administrative block, are situated on a site overlooking the valley of the Roach, near to the present workhouse. The pavilions are in two stories, with fire and sound-proof floors. They are 91 ft. 3 in. long by 24 ft. wide by 12 ft. to ceiling. Each floor consists of a main ward, to contain twenty-eight beds, a separation ward for two beds, 16 ft. by 14 ft. 6 in., a ward kitchen with inspection window, storeroom, pantry, bathroom, and lavatories, etc. The wards have, in addition to Shorland's stoves, a system of heating by radiators heated by steam from the main boilers. The ventilation is natural by the windows. At the end of each pavilion is a dayroom, with octagonal bay warmed by an open fireplace and radiators, and adjoining this is a balcony and also an iron fire escape. The floors are of maple, to be polished, and are laid upon hair bitumen. A stone staircase, 9 ft. 6 in. over all, is at the upper end. The administrative block is placed between the two pavilions, and consists on the ground floor of nurses' sitting and dining-rooms, scullery, storerooms, surgery, etc., and separate waiting-rooms for males and females. On upper floor, approached by a stone staircase, are probationers' room, 21 ft. by 15 ft., superintendent nurse's sitting and bedrooms, storeroom, six bedrooms, 10 ft. by 10 ft., bathroom, lavatories, linen-room, etc. The corridors are 8 ft. wide. On the upper floor are provided ten bedrooms, linen-room, bathroom, lavatories, storeroom, etc. The whole of the floors and corridors are of terazzo, and the walls of the corridors have tiled dadoes, 4 ft. high. There is also provided at the north end of the building a fire escape. The corridors are warmed by radiators, and each bedroom has a fireplace. The main corridor, which runs from end to end, is of one story; it is 261 ft. long, 7 ft. 6 in. wide, roofed with concrete, and covered with Val de Travers asphalt, and the upper part forming a promenade. The maternity ward is 28 ft. by 24 ft., and provides for six patients, and comprises—labour ward, 15 ft. 6 in. by 14 ft. 6 in., with surgical fitments; a ward kitchen, 11 ft. 6 in. by 11 ft. 6 in., with inspection window; linen store, pantry, and store for coal and brushes, bathroom, lavatory, etc. This block is self-contained, and is approached by a shorter corridor 6 ft. wide from the main corridor. There are telephones in the various buildings in communication with the superintendent nurse and master and matron. Fire hydrants are fitted throughout the buildings and in the yards, and a fire alarm is provided to call the staff together in cases of emergency. Covered subways are provided to allow of easy access for repair, etc., to pipes, and in these are fixed the water and steam mains and heaters, electric light, telephone, and fire alarm cables. The total number of beds provided by the new buildings is 126, in addition to the accommodation for the nursing staff, etc., and when the two end pavilions are erected there will be provision for a further seventy-five beds, making a total of 201, without any additional accommodation being required in the administrative block. Mr. Alfred Hopkinson, of Bury, was the architect, and Mr. James Byrom, Bury, the principal contractor, and the sub-contractors included Messrs. J. & G. Brown, Tottington, plumbing, glazing, gas, water, and sanitary work; Messrs. J. Kay & Sons, Bury, slater's work; Messrs. R. S. Blackburn, Hebden Bridge, electric wiring for bells, telephones, and lighting; Messrs. Ashworth & Parker, Bury, electrical plant; Messrs. Tetlow Bros., Hollinwood, boilers; Mr. Higginbottom, Idle, painting; Mr. Pattison, Manchester, terazzo work; Messrs. Mather & Platt, Manchester, heating and hot water fittings. Mr. G. R. Peers, of Manchester, has been the consulting electrical engineer. The buildings are of Accrington plastic bricks and Darley Dale stone, with Valenhelli slates.

PUBLIC LIBRARY, CIRENCESTER.—The public free library and reading-rooms, erected, equipped, endowed, and presented to his native town by Mr. Daniel George Bingham, were opened on the 21st inst. at Cirencester. The building, which has been erected from the designs and plans of Mr. V. A. Lawson, A.M.Inst.C.E., of Cirencester and Stroud, is in the Tudor style of architecture. It contains a reading-room, smoking-room, porter's lodge, lecture and entertainment room, lending library, reference library, gymnasium and recreation-room, librarian's flat, and a porter's cottage. The institution will cost altogether about 50,000*l*.

STAINED GLASS AND DECORATION.

WINDOWS FOR S. PAUL'S CHURCH, PORT ADELAIDE.—Messrs. Percy Bacon & Brothers, of London, have just executed and shipped a three-light chancel window and a baptistery window of two lights for the above-named church. The chancel window contains the subject of the Te Deum, depicted through the three lights, treated with Our Lord seated in glory at the upper part of the centre light; and in the two-light baptistery window the Adoration by the Magi is shown through both lights, being very full of detail in front and back scenes. A brass tablet with a memorial inscription accompanies the windows.

FOREIGN.

FRANCE.—The monument raised by public subscription to Camille Desmoulins, in the garden of the Palais Royal, was inaugurated last week. It is the work of M. Boverie, sculptor, and M. Richard, architect.——The lunatic asylum at Dury, near Abbeville, is to be rebuilt, at an estimated cost of 495,000 francs.——A new hospital and a post-office building have been opened at Montiers (Savoie).——A monument to Taine has been inaugurated at Vouziers.——A monument commemorative of the siege of Saint-Dizier, in 1544, has been erected in that town. M. Réné Carillon is the sculptor, and M. Emile Ferrant the architect. The monument, about 10 mètres in height, consists of a large base on which is a pedestal representing a fragment of the ramparts, in front of which are the figures of the principal defenders of the town, while above it the town itself is symbolised by the figure of a woman leaning on a flagstaff.——A new decorative fountain is to be opened shortly at Beauvais, erected by public subscription. M. Henri Gréber is the sculptor, who exhibited the model of the fountain at the last Salon. The design includes a figure of Venus advancing on a shell borne by two Tritons.——The Duke of Argyll, who has purchased a large estate at Hardelot, near Boulogne, has built a villa there from the designs of Mr. A. Vye-Parminter, of Paris.——The Salon d'Automne, which will open on October 19 at the Grand Palais, will include a special collection of the paintings and drawings of Ingres, and also a good many of the works of Manet.——On the pedestals at the doorway of the Pavillon Marsan at the Louvre have been placed the plaster models of two figures of stags, made by M. Auguste Cain for the Château of Chantilly, and which were left by the Duc d'Aumale to the Musée des Arts Décoratifs.——The town of Hirson (Aisne) has opened a competition for the plans for a new upper class girls' school.——The Municipality of Paris have founded sixteen scholarships (*bourses*) for young students of both sexes admitted to the Ecole des Beaux-Arts and the Conservatoire de Musique. ——The town of Agen is about to open a competition for a new Municipal theatre.——The works for the construction of a new Bourse de Commerce at Roubaix are to be shortly commenced. ——Works are to be shortly taken in hand for the enlargement of the port of Arzen (Algeria), at a cost of 1,200,000 francs.

SOUTH AFRICA.—At King William's Town a large new building, forming the headquarters of the Sun Insurance Company in South Africa, has been formally opened in the presence of a large and representative gathering.——The strike in Cape Town, resulting from the dispute between the Masons' Society and the Master Builders' Association, in reference to the deduction of weekly sums to pay the premiums under the Workmen's Compensation Act has been settled by the master builders withdrawing their demands.——The Treasurer of Cape Town recently laid the foundation-stone of the Girls' Collegiate School at Port Elizabeth. The new building has a frontage of 200 ft., and has sound-proof and fire-resisting floors. The roof is to be covered with English red Broseley tiles. The design is by Messrs. Stucke & Bannister. The contractor is Mr. McClelland, whose contract price was 12,500*l*.——The bridge over the Valsch River at Kroonstad will be opened by the Lieut.-Governor in the first week of October.——The East London Builders' and Manufacturers' Association have combined to form a mutual guarantee fund as a means of assurance for members against risks in connexion with the Employers' Liability Act. The articles of association have been approved, trustees and guardians appointed, and offices opened.——At Johannesburg the main contract for a new building to be erected for the Standard Bank Institution will soon be given out for tender. The building will occupy a site at the corner of Harrison and Commissioner streets.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Henry Hall, architect, has removed from 19, Doughty-street, to No. 20, Quernmore-road, Stroud Green, Harringay Station.——Mr. R. J. Ward, late manager to Messrs. J. Jones & Sons, general engineering contractors (Newcastle-on-Tyne and London), has taken over their business, which will now be carried on by him as "The J. R. Ward Co." at the same address — Emerson-chambers, Blackett-street, Newcastle-on-Tyne.

PROTECTION FOR ARCHITECTS.—The *Manchester Guardian* reports that a lively discussion took place at the meeting of the Ashton Town Council on the 13th inst. on a recommendation in the minutes of the Education Committee that a Manchester architect be engaged to supervise some alterations at Ryecroft School, the total cost of which is not to exceed 1,000*l*. The matter had already been referred back, and the county architect called upon to adjudicate upon the plans. Mr. Coop said that so long as local architects were suffering from depression in trade he would object to work going outside. They had capable men in Ashton, and the town hall and technical school had been built under the supervision of local men. The last time an outside man was engaged by the Corporation was about forty years ago, and the result was a barn-like structure, the baths. The minutes were ultimately passed.

THE "ENGRATIC" NON-SLIPPING STAIR-TREAD. —The Engratic Stone Company (Fulham) send us a specimen of their stair-tread, which appears to be a very good and durable contrivance for giving firm foothold on stairs. The stairs are made of the Company's artificial stone called "engratic." Into each step, while being moulded, two strips of teak are inserted, with the grain endways, and projecting slightly above the surface of the stone. These give an excellent foothold, as we have proved on trial, they will stand a great deal of wear, and make less noise under the foot than metal of any kind. The engratic stone itself seems a very good material of its type. It can be made either of a coarser grain, for steps and other practical purposes, or of a finer grain for carving. The patentees claim that it can be carved as easily as Portland stone, which the finer kind rather resembles in appearance. We have not seen any carving executed in this material, but we should expect, from its texture, that carving could be satisfactorily executed in it.

THE LINOLITE LAMP.—We have received from the Linolite Company, of 25, Victoria-street, Westminster, a pamphlet giving the results of a comparative test made on the illuminating power of a "linolite" lamp and an ordinary glow lamp. The test was carried out by Mr. D. L. Sands at the Municipal School of Technology, Manchester. The average value of the illuminating power over an area 12 ft. in diameter under each lamp was found, the lamps being fixed at a distance of 5 ft. 6 in. above the horizontal surface. It was found that for the same consumption of power the linolite lamp gave about 57 per cent. more light than the ordinary glow lamp. It is stated that an aluminium reflector was used with the linolite lamp and an opal reflector with the glow lamp. We would suggest that the apparent advantage of the linolite lamp was due to the greater efficiency of the aluminium reflector over the semi-transparent opal reflector. The glowing carbons, each consuming the same amount of energy presumably, give out the same amount of light. If they do not, one must be at a higher temperature than the other. In this case we would be comparing a "high efficiency" short-life carbon filament with a "low efficiency" long-life carbon filament, and the comparison would be valueless so far as the relative efficiency of the linolite lamp and the glow lamp are concerned. The test shows clearly that an opal reflector is worse than an aluminium reflector. The linolite lamp has its uses, but a glow lamp suitably silvered would give a floor illumination equal to that measured by Mr. Sands. We think that the pamphlet might mislead the ordinary non-technical reader into thinking that the linolite lamp gave out more light than if the carbon filament were enclosed in a bulb-shaped lamp.

UNIVERSITY COLLEGE, LONDON.—The work of the Architectural Department, under Prof. F. M. Simpson, is being specially developed. The courses for the three years' training are now completed. At the opening of the session on October 3 two new studios will be provided for junior and senior students, and also special smaller studios for more advanced students doing special work. With the help of the Carpenters' Company arrangements have been made for a series of demonstrations on the working of materials and their construction, to be held at the Company's Trades' Technical School, Great Titchfield-street. This will bring the lectures into close association with practice, and will save the necessity of duplicating a museum of materials and structures.

PRESERVATION OF ANCIENT MONUMENTS AT CORK.—At an adjourned meeting of the Cork County Council last week an influential deputation sought the aid of the Council in the preservation and renovation of the ancient monuments in the district. Dr. Windle, president of Queen's College, Cork, said he had seen the destruction of these heirlooms, which should be preserved and handed down to succeeding generations. To destroy them was almost as serious as to destroy the title deeds of an estate, because they were the things to which they were able to point as the existing living memorials of what took place in bygone days. People had not been educated up to this view of things, and they had sometimes seen raths destroyed and stones with ancient inscriptions broken up to mend the roads. The object of the deputation, Dr. Windle added, was to urge upon the Council to take up the guardianship of these priceless relics. They did not ask for the expenditure of much money—merely sufficient to prop up these monuments and save them from decay or injury. The chairman (Mr. Howard) said the Council were in full sympathy with the object of the deputation. Formerly this duty devolved on the Irish Board of Works, and they did it badly. He would object to spending money on private work unless they were given control of these monuments. He suggested that those needing repair should be scheduled and inspected by the county surveyors, and the cost of repair, etc., be ascertained. They could then approach the Board of Works and find out why they neglected the protection of these national monuments. This suggestion was agreed to.—*Times.*

ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF MASTER HOUSE PAINTERS AND DECORATORS.—The twelfth annual convention of this Association was opened at the Guildhall, Plymouth, on the 20th inst. Mr. H. Vigurs Harris, the President, in the course of his opening address, said that he thought they might fairly say that until about ten years ago the house painting and house decorating trade was rather on the down grade. It was quite true in some favoured parts of the country there was intelligence shown, and the material which was supplied to the operators was good, but on the commercial side there had been a distinct depreciation; the workmen, he thought, were not so qualified as they were some thirty or forty years ago. The unhappy side of trade unionism—and it had a very unhappy as well as a happy and useful side—was sometimes unduly predominant, and there had been a scarcity of good and steady operators. He thought, however, through the energy and service of the Association, they were beginning to alter that state of things. He had never been able to find out any satisfactory reason for that decadence, saving the alteration in the public method of having its work done. They changed from the old-time method of keeping the man who had served them well, and the whole of the public—public bodies especially—accepted the system of contract by public tender. He believed that that system of wild and almost unchecked competition had had a most disastrous effect on a great many branches of the building trade, and not least upon the trade of the painter and decorator, because when things were reduced to their lowest level, and a man did not know whether he would get out with 5, 10, or 20 per cent. profit or loss, he did all he could to save himself from loss. The result was the apprentices were no longer so carefully trained, as they were turned into money-producing apprentices instead of apprentices who had to take their part later on in the life and service of the nation. Their Association had been glad to make its members more serviceable. A large amount of money was being spent in educating the youth of the country, not only in the handling of their tools, but also in the conception of beauty they were doing something. They believed their institution would help to stimulate the youth of their towns, as well as the masters themselves, and they would see large and abundant fruits from the competition. On the conclusion of the address, Sir Joseph Bellamy opened the exhibition, which was held in connexion with the convention.—The evening session was held with closed doors, the President being in the chair. Greetings were received from the Associations of Master Painters in Scotland and Ireland, and these were ordered to be entered upon the minutes. The Secretary reported that the committee had to look back upon a year which, if not marked by great eventfulness, contained the record of useful work accomplished and steady progress made. During the year ended August 31, twenty-seven new members joined. The Painting school completed its full session in March last, and in the opinion of the committee, fully justified its establishment from an educational standpoint. The committee had to acknowledge the kindness of the Wall-paper Manufacturers in again placing 100*l*. at their disposal for scholarships. The Educational Committee's report stated that there appeared to be a great lack of enthusiasm in some districts, for although there was an increased entry of competitors in the district where the convention was held for a short time, they soon fell away.—On Wednesday Mr. G. C. Haité, R.I., read a paper on "The Future of Decoration in this Country: Some Considerations and Suggestions." He said the fine arts were not the cause, but the effects of commercial energy and prosperity, which, on the contrary, the applied and industrial arts were the cause and not the effect of a nation's prosperity. Decorative and applied art was governed absolutely by rules and laws which would, if observed, dignify even the ordinary achievement by its intelligence and fitness, but which if avoided would nullify the greatest efforts of genius, and render them examples of misapplied efforts. These principles of law were impartible, and should be imparted. Art could not be taught, but inherent abilities could be directed. The knowledge of the governing laws of art could be imparted, and must tend to the appreciation of art. The Royal Academy Schools had provided professors of painting, sculpture, architecture, anatomy, and chemistry. Had not the time arrived for a professor of decoration—of applied design? The

past mischief must honestly be laid at the doors of the Royal Academy, which had dominated the fashion, and educated the public to look upon decoration as something quite inferior to painting, and the painters had received honour denied to the other branches, so that able men had been content, if not compelled, to be known by a third-rate picture rather than as a master in any other phase of art. He ventured to predict that the future of decoration and decorative art would be more in the hands of those properly trained, and would be regarded as worthy to rank with the other arts, that there would be additional professorships at the Royal Academy of Arts, and that the trade would work under conditions that would cause good work to be recognised, appreciated, and equitably remunerated. Papers were also read by Mr. A. E. Bramley, head master of the Association's Painting School, on "Methods of Training for Decorators," and Mr. W. Whitelaw on "The Importance of the Local Association; How to Develop Interest in it, and Make it Useful."—The fifth annual meeting was also held, the President presiding. Mr. Preston proposed a vote of thanks to Mr. Vigurs Harris, the retiring President. Mr. Whitelaw seconded, and the proposition was also supported by Mr. Hickson, Mr. Squire (Bideford), and the general secretary. Thanks were also accorded the outgoing officers. On the motion of the retiring President, seconded by Mr. Millington, and supported by Messrs. Preston and Spencer, Mr. J. H. Turner, of Wakefield, was unanimously elected President for the ensuing year. Mr. J. W. Bellamy (Birmingham) was elected Treasurer, in the room of Mr. Turner, and Messrs. Cantrall (Manchester), Teal (Birmingham), Smyth (West Hartlepool), and Evans (Bristol), were appointed Vice-Presidents. The auditors were re-elected.—On Thursday the annual banquet was held at the Royal Hotel, Plymouth. Mr. J. H. Turner, President-elect, proposed "The Mayor and Corporation of Plymouth," to which the Mayor replied. Mr. G. C. Haite, R.I., submitted "Architecture and the Allied Arts," and Mr. Alton Bazeley, in response, said it was not so much from Corporations as from the public that architects suffered. Members of their profession often got all the blame for things which were not quite satisfactory, when really the blame should be on the shoulders of the public, and what they wanted to do was more than ever to cultivate the taste of the public. Sir Joseph Bellamy gave "The National Association of Master House Painters and Decorators of England and Wales Incorporated." Mr. J. W. Bellamy, Treasurer-elect, responded, and also the President, who said that the Association stood for the restoration of the trade and the craft, something in the same way as the old guilds.

Legal.

PARTY WALL DISPUTE.

THE case of Newton *v.* Huggins came before Mr. Justice Bray, in the Vacation Court, on Wednesday, on a motion by the plaintiff for an interim injunction.

Mr. Draper, in support of the motion, said that the plaintiff was the owner of property at Ealing, and he asked for the injunction to restrain the defendant, the owner of a public-house called "The Halfway House," Uxbridge-road, from continuing to remove the party wall dividing plaintiff's premises, No. 274A, Uxbridge-road, and the public-house, and from committing any injury to the premises until the trial of the action or further order.

His lordship: You are not within the provisions of the London Building Act?

Mr. Draper: No, my lord.

His lordship: Then you rely on your common law rights?

Mr. Draper: Yes.

His lordship: Then the matter resolves itself into what right you have got to interfere with the defendant rebuilding the party wall.

Mr. Draper said that was so. He submitted that this was a party wall of which the two owners were tenants in common. His contention was that having regard to the manner in which the party wall was demolished and the damage which the defendant was doing, the plaintiff was entitled to an injunction in the proceedings he had instituted.

His lordship said he would assume in Mr. Draper's favour that the wall in question was a party wall, of which the parties were tenants in common.

Mr. Draper submitted that in the counts which had happened the injunction should go. The plaintiff bought the property in 1901. On June 16 last the plaintiff had a notice from the defendant's surveyor to say that it was proposed rebuilding the public-house, and in reply plaintiff's solicitor wrote that he should require the defendant to indemnify his client for any loss he sustained. On September 6 the plaintiff, who was a retired man of business, walking by the premises, found the defendant's workmen pulling down the brickwork and taking off the slates.

His lordship: The damage appears to be done. You had much better let it go on and be finished. You have got your full remedy for damage. Circumstances showing great carelessness, and so on, will have to be considered at the trial.

Mr. Galbraith, for the defendant, said that the plaintiff had to satisfy his lordship that permanent injury would be done to his premises by what had been done.

His lordship: I cannot grant an interim injunction, but I will reserve the costs of this motion for the judge at the trial.

Mr. Draper: Do you not think that some undertaking should be given by the defendant as to the care with which the work should be done?

His lordship: That is useless, as he is bound to use that care.

Mr. Draper: My learned friend should undertake that my client's permission should be obtained before entering upon my premises or from continuing the trespass.

His lordship: That is a comparatively small matter. You will get your damages if they have been guilty of trespass. I think the work should go on. I will make no order except that the costs of this motion should be dealt with by the judge at the trial.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

12,036 of 1904.—F. R. LUKE: *Fireproof Doors.*

A fireproof door consisting in the combination of two or more slabs of fibro-cement or other suitable fire-resisting material held apart by stiles or rails or distance pieces, so as to leave an air space between the slabs, strips or blades of metal upon the faces of said slabs adjacent to the edges, and if desired over the rails or distance pieces. Hinges having straps embrace the slabs over the rails, and bolts or rivets passing through the several thicknesses solidly connect the parts together.

23,384 of 1904.—B. WAYGOOD & CO., LTD, and H. C. WALKER: *Hydraulic Lifts and Hoists.*

This relates to electrically controlled hydraulic lifts and hoists, and consists in means, comprising a solenoid, electrical connexions between the latter, lift enclosure doors and lift controller, and means such as an arm or lever connected with the plunger of the solenoid so that the movement of the latter is caused to operate a spindle having a suitable connexion with an auxiliary valve whereby the latter is actuated to open the water supply, upon any spontaneous upward or downward movement of the cage, to restore equilibrium.

26,516 of 1904.—J. STANDT: *Manufacture of Artificial Stone Composition.*

A process of manufacturing artificial stone composition which consists in mixing powdered quartz meal and quartz sand with from 5 per cent. to 20 per cent. of linseed oil, then rubbing and screening the mixture into the form of a powder, afterwards heating the powder in a thin layer to stiffen it without destroying its plasticity and thereafter moulding the mixture and baking it into stone at a temperature up to 200 deg. C. from twelve to twenty-four hours.

7,134 of 1905.—S. WARREN: *Apparatus Applicable as a Level or Plumb Rule and for Measuring and Plotting Inclinations.*

This consists in the combination with a measure and protracting rule of a spirit level which can be placed parallel with or at right-angles to a blade of said rule by means of a plate inserted in one of the faces of a blade of the rule and having notches to receive lugs on a bracket carrying the spirit level, the said bracket being held in place by a screw, and the level by ledges on the bracket.

7,511 of 1905.—P. A. SHELEY: *Chimney Cowls.*

A chimney cowl having a body or cap provided with an arched cover forming a transverse opening, an intermediately fulcrumed valve pivoted within the cowl slightly below the lower side of said opening whereby the lower blade of the valve is shielded, the walls of the body or cap being provided with troughs, over which the lower edge of the valve is adapted to swing, and with openings by which these troughs communicate with the outside of the cowl of the chimney.

8,306 of 1905.—T. HANNAH, F. HANNAH, and A. J. ROSENTRETER: *Spring Actuated Door Closers.*

A door closer consisting in the combination of a casing, a pintle mounted therein and arranged to turn with a door to which it is connected, a coiled spring in said casing having its upper and lower coils ending in arms extending inwardly and terminating in loops loosely encircling said pintle in opposite direction, with both arms normally under tension, abutments on said casing adapted to prevent the movement of the lever arm in one direction and the upper arm in the opposite direction, and means carried by said pintle for engaging said arms and holding said spring under tension and causing one or other of the said arms to move with the pintle to increase the tension, the other arm being held against such movement by its abutment.

8,508 of 1905.—J. R. DUNCAN: *Closures for Plumbing Traps, or the like.*

This consists in the combination of a fitting having hand-holes formed in a neck integral with the body of the fitting, said opening having an inner shoulder, a tapered seat of non-corrodible metal screw threaded in the opening and seated on the shoulder, a correspondingly tapered closure of similar metal fitting the seat and having a boss to be engaged in removing the closure, and a cap of non-corridible metal screwed upon the neck over the closure and having a top with a cavity in its inner surface to receive the boss on the closure, whereby the closure is engaged round its periphery only, and forced firmly into its seat by the pressure of the cap.

11,945 of 1905.—T. A. AMBROSE: *Machine for Cutting Mortises.*

A machine for forming mortises characterised by the cutter thereof being drawn lengthwise through the material to be cut, a hollow cutter having back and front cutting faces so arranged that strips are formed in one operation which on removal or disengagement leave an undercut groove of any appropriate shape.

13,275 of 1904.—M. BARRASFORD: *Body Support for Use in Domestic Baths.*

This invention relates to a body support for use in domestic baths for preventing the person using the bath sinking below the surface of the water in case of sudden faintness. The support may be secured to any ordinary form of existing bath by means of clips or suspending brackets fitting on the edges of the bath. These carry a horizontal body-rest of wood or other suitable material, partly embracing the body of the user, and to these are hinged arms, which can be turned round the body of the user and secured, embracing the body beneath the arms and preventing it slipping down entirely below the surface of the water.

23,314 of 1904.—W. BROOKE: *Manhole Channel for Sewerage.*

This relates to the construction of the junction parts of invert channel blocks and invert conduits, and consists in the combination of a raised step upon one or both sides of the channel blocks, in conjunction with a shoulder or foot piece upon the underside of the inverts or inlet used therewith.

23,348 of 1904.—D. GREIG, S. CHANDLER, and J. CHANDLER: *Apparatus for Automatically Lighting and Extinguishing Public and other Lamps.*

According to the invention, a suitable vessel is provided, the bottom of which is charged with liquid. In this vessel is fixed a drum valve, which rotates on a hollow, fixed axle, passing through its centre and the outer walls of the vessel. This axle is the gas supply to the drum valve. The level of the liquid is above the centre of the shaft, in order to seal the joint. The outer edges of the drum valve are provided with suitable crossbars, leaving a space between the body and the bar. A bell-holder or holders are arranged in position to rise and fall with the pressure of gas, and attached to the bell or holder is a rack, having a number of hinged levers, which engage the crossbars of the valve drum, and cause the rotation of the drum valve half a revolution, for opening the gas supply. The holder descends on removal of the pressure.

24,729 of 1904.—J. H. HALLIER and R. H. MACHELL: *Pipe Joints.*

This relates to joints of earthenware pipes and the like, and consists in the formation of the socket end with a groove and a pouring hole or holes, and the spigot end with a portion of its extremity reduced in thickness, and a bead at the invert, the reduced portion of the spigot end corresponding with the groove in such manner that a ring of canvas or the like can be placed round such reduced portion, and within the groove, with means for placing and securing such strip of canvas in position.

26,351 of 1904.—A. KOREN, JUN.: *Conduits and the like.*

A tubular conduit for fluid under pressure, comprising a plurality of tubular sections, telescoping within each other with packing rings and the like, maintaining a tight joint between such sections, so that the entire structure forms a conduit adapted to be collapsed and to be extended, connexions being provided between the end tubes of each set, which maintains a passage for the fluid in all positions of the conduit, said tubular conduit being connected to a like

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

collapsible and extensible branch conduit through the medium of a manually operated valve.

24,402 of 1904.—M. J. ADAMS: *Flushing Cisterns.* This consists in the use, within a cistern or in communication with the same, of a vessel having an exit communicating with a siphon outlet pipe and an inlet air pipe, and in connexion with the inlet air pipe a bellows, or air vessel, which, when pressed, shall pass air contained therein to the vessel first named; this vessel is so placed in the cistern, or is in such communication therewith, that when water is fed to the cistern it also enters the vessel. The object of the invention is to eject the water contained in the vessel by air pressure from the bellows, such water passing over the siphon outlet pipe, and so setting up a discharge which, by means of a suitable inlet feed valve supplying the siphon, shall draw off the contents of the cistern, and so flush any apparatus with which it is connected.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

Sept. 15.—By H. F. RUSSELL & SON (at Leominster).

Wigmore, Hereford.—"Deerfold Land," 19 a. 0 r. 29 p., f.	£150
Kingsland, Hereford.—"Brook End House" and 4 a. 0 r. 15 p., f.	435
"Foxholes" and "Vernals Croft" Enclosures, 8 a. 2 r. 8 p., f.	430
"Mortimer's Cross Field," 4 acres, f.	180
"Great West Field," 10 a. 3 r. 19 p., f.	490

By HAMPTON & SONS, with A. C. LOVEY & SONS (at Exeter).

Dunchideock, etc., Devon.—Portions of the Dunchideock Estate, comprising farms, lands, cottages, etc., area 1,199 a. 2 r. 21 p., f. (in lots)	11,780

Sept. 18.—By NOYS & HOWES (on the premises).

Sydenham.—Newland's Pk., "Stanmore Lodge," f., p.	1,125

Sept. 19.—By DAVID BURNETT & CO.

Tottenham.—Crowland-rd., f.g. rents 116*l.*, reversion in 83 yrs.	2,740
Crowland-rd., f.g. rents 120*l.*, reversion in 93 and 94 yrs.	2,840
Chingford.—Endlebury-rd., "Chisholm Lodge" and ¾ of an acre, f., p.	1,050
Tottenham.—15, Pembroke-rd., f., y.r. 30*l.*; 40 and 42, Peaconsfield-rd., u.t. 71 yrs., g.r. 12*l.*, y.r. 52*l.*	380 440

By RUTLEY, SON, & VINE.

Camden Town.—45, Georgiana-st., u.t. 34 yrs., g.r. 8*l.*, p.	355

By THORNBOROW & CO. (at Penrith).

Penrith, Cumberland.—"Mount Eden Farm," 56 a. 3 r. 39 p., f.	3,250

By G. LOVETT & SONS (at Coventry).

Coventry, Warwick.—20 and 21, Much Park-st., area 7,729 yds., f., y.r. 90*l.*	1,390
Barkers Butts-la.—Four enclosures, 15 a. 3 r. 22 p., f.	1,125
Hunningham, Warwick.—Three closes of land, 23 a. 0 r. 25 p., f.	540

By PERKINS & SON (at Southampton).

Saribury, Hants.—"Copse-hill" and 8 a. 1 r. 21 p., f.	1,650
Various pieces of land, 33 a. 3 r. 28 p., f.	4,240
Two freehold cottages, and 0 a. 0 r. 32 p.	590
Plot of land, with stable, store, etc., 1 a. 2 r. 38 p., f.	270

September 20.—By P. & G. GEEN.

Lambeth.—3 to 21 (odd), Waterloo-rd.; also "Commercial Buildings," u.t. 3½ yrs., g.r. 100*l.* w.r. 76*l.* 10s.	435

September 21.—BATCHELAR & SON (at Croydon).

Croydon.—73 to 85 (odd), Greenside-rd., f., y.r. 182*l.*	2,210

Contractions used in these lists.—*F.g.r.* for freehold ground-rent; *l.g.r.* for leasehold ground-rent; *i.g.r.* for improved ground-rent; *g.r.* for ground-rent; *r.* for rent; *f.* for freehold; *c.* for copyhold; *l.* for leasehold; *p.* for possession; *e.r.* for estimated rental; *w.r.* for weekly rental; *q.r.* for quarterly rental; *y.r.* for yearly rental; *u.t.* for unexpired term; *p.a.* for per annum; *yrs.* for years; *la.* for lane; *st.* for street; *rd.* for road; *sq.* for square; *pl.* for place; *ter.* for terrace; *cres.* for crescent; *av.* for avenue; *gdns.* for gardens; *yd.* for yard; *gr.* for grove; *b.h.* for beerhouse; *p.h.* for public-house; *o.* for offices; *s.* for shops; *ct.* for court.

MEETINGS.

SATURDAY, SEPTEMBER 30.

Northern Architectural Association.—Students' Sketching Club Excursion.

Incorporated British Institute of Certified Carpenters.—Visit to the Garden City and Exhibition of Cheap Cottages, Letchford. Leave King's Cross, G.N.R., by the 1.45 p.m. train.

Institute of Sanitary Engineers, Ltd.—Visit to the Works of the Associated Portland Cement Manufacturers, Ltd., at Northfleet. Assemble at Northfleet Station 3.20 p.m.

MONDAY, OCTOBER 2.

Society of Engineers.—The ordinary meeting will be held at the Royal United Service Institution, Whitehall. A paper will be read entitled "Machine Drills for Hard Rock," by Mr. Arthur H. Smith, A.M.Inst.M. and M.E. The paper will be illustrated by lantern views. The chair will be taken at 7.30 p.m. precisely.

WEDNESDAY, OCTOBER 4.

Institute of Sanitary Engineers, Ltd.—Sessional Meeting. Mr. A. A. Kemp on "Estate Development." 7 p.m.

Provident Institution of Builders' Foremen and Clerks of Work.—Ordinary Meeting of the Members. 8 p.m.

FRIDAY, OCTOBER 6.

Royal Sanitary Institute.—Mr. A. Wellesley Harris, M.R.C.S., D.P.H., on "Elementary Statistics." 7 p.m.

TERMS OF SUBSCRIPTION.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 8 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 4 0	" " "
Facing Stocks	2 0 0	" " "
Shippers	2 0 0	" " "
Flettons	1 7 0	" at railway depôt.
Red Wire Cuts	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 2 6	" " "
Do. Bullnose	4 7 6	" " "
Best Stourbridge Fire Bricks	4 0 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered
Thames Ballast	5 9	" "
Best Portland Cement	27 0	per ton, "
Best Ground Blue Lias Lime	20 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dp't.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—Scappled random blocks	3 0	per ft. cube, "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

STONE (*continued*).

HARD YORK (*continued*)—Hopton Wood (Hard Bed) in blocks	2 0	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1 0	" "
" " " 2 in. do.	0 8½	" "

SLATES.

in. in.	£ s. d.	
20 x 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 x 12 " "	13 17 6	" "
20 x 10 first quality "	13 0 0	" "
20 x 12 " " "	13 15 0	" "
16 x 8 " " "	7 5 0	" "
20 x 10 best blue Portmadoc	12 12 6	" "
16 x 8 " "	6 12 6	" "
20 x 10 best Eureka unfading green	15 17 6	" "
20 x 12 " "	13 7 6	" "
18 x 10 " "	13 5 0	" "
16 x 8 " "	10 5 0	" "
20 x 10 permanent green	11 12 6	" "
18 x 10 " "	9 12 6	" "
16 x 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. " "
Best Broseley tiles	50 0	per 1000 " "
Do. Ornamental tiles	52 6	" " "
Hip and Valley tiles	4 0	per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 " "
Do. Ornamental do	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 " "
Do. Ornamental do	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1000 " "
Best Ornamental tiles	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "
Best "Hartshill" brand plain tiles, sand faced	50 0	per 1000
Do. pressed	47 6	" " "
Do. Ornamental do	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 6	" " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13 10 0	15 0 0
Deals: best 3 by 9	13 0 0	14 0 0
Battens: best 2½ in. by 7 in. and 3 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 0 0	4 10 0
Small timber (5 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 10 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in	24 0 0	25 0 0
3 in. by 9 in.	22 0 0	23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0
Do. 3 in. by 9 in.	12 10 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	10 0 0	11 0 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Yellow Pine oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—Large, per ft. cube	0 3 0	0 3 6
Small " "	0 2 6	0 2 9
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¾ in. do. do.	0 0 7	—

PRICES CURRENT.—*Continued on page 323.*

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITION.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
Large Shelter or Concert Hall, with Café	Bridlington Corporation	36*l.* 15*s.* and 21*l.*	Oct. 20

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Painting Works	Shrewsbury Estates Committee....	Borough Surveyor, The Square, Shrewsbury	Oct. 2
Erection of Farmhouse at Maidencombe	Mr. G. Nickels	Mr. Back, 4, Victoria-street, Totnes	do.
General Repairs, etc., at School, Rotherham	West Riding Education Committee	County Architect, County Hall, Wakefield	do.
Supply of Granite and Steam Rolling	Felixstowe and Walton U.D.C.	Council's Surveyor, Town Hall, Felixstowe.....	do.
Painting, Whitewashing, etc., at Fusehill Hospital..	Carlisle Guardians	Master's Office, at Hospital, Carlisle.....	do.
Extension of East Roof of Glasgow Central Station..	Caledonian Railway Co.	Company's Engineer, Buchanan-street Station, Glasgow	do.
Supply of Pitch for Paving Purposes.....	Manchester Corporation Tramways	Tramway's Department 55, Piccadilly, Manchester	do.
Block of Eighteen Workmen's Dwellings	Bodmin U.D.C.	Borough Surveyor, Bodmin	Oct. 3
Enlargement of Filter Beds	Ashton-in-Makerfield U.D.C.	Council's Waterworks Engineer, Ashton-in-Makerfield	do.
Repairs to Roof of Town Mills	Guildford Town Council	Borough Engineer, Guildford	do.
Carting and Laying Cast-Iron Water Mains, etc.....	Seitz U.D.C.	P. Griffith, Engineer, 54, Parliament-street, S.W.	do.
*ROAD-MAKING AND PAVING WORKS.....	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do.
Supply and Delivery of Broken Granite.....	Littlehampton U.D.C.	Council's Surveyor, Town Offices, Littlehampton	Oct. 4
Works of Scarifying and Steam Rolling.....	do.	do.	do.
Paving Works.....	do.	do.	do.
Fix. Hot-water Apparatus, Bethel Chapel, Llansamlet	The Committee	Llynfell House Llansamlet.....	do.
New Elementary Schools	Taunton Education Committee....	Bryan & Roberts, 2, Hammet-street, Taunton	do.
Materials, Cartage, Hire of Roller, etc	Weybridge U.D.C.	Council's Surveyor, Weybridge	do.
Erection of School Buildings at Gurnard.....	Isle of Wight Education Committee	Office of Architect, 5, St. Thomas-street, Ryde, I.W.	do.
Erection of Warehouse, High-street	Glasgow Corporation	Burnett, Boston, & Carruthers, 180, Hope-street, Glasgow	do.
New Premises, Belfast	"Irish News," Ltd.	J. J. McDonnell, 27, Chichester-street, Belfast	do.
Supply of Road Materials	Rothwell U.D.C.	Council's Surveyor, Rothwell, Northants	do.
Supply of Granite Channel	Ramsgate Corporation	Borough Engineer, Albion House, Ramsgate	do.
Supply of 200 Tons of Spalls for Breaking	Woolwich Guardians	Clerk, Union Offices, Woolwich	do.
Painting Works at Hospital Buildings	Llantrisant and Llantwit R.D.C. ..	Council's Surveyor, School-street, Pontyclun	do.
*WIRE GUARDS FOR GORE FARM FEVER HOSP.	Metropolitan Asylums Board	Office of the Board, Embankment, E.C.	do.
Construc. Culvert, Boundary Walls, etc., Workhouse	Bristol Guardians.....	T. J. Scoones, 10, Orchard-street, Bristol	Oct 5
Work at Workhouse	Ormskirk Guardians	J Dod, Architect, D16, Exchange-buildings, Liverpool	do.
Extension of Electric Power Station	Aston Manor Corporation	Borough Engineer, Council House, Aston Manor	do.
New Schools, Tilehurst	Berks Education Committee	E. C. Pinks, Parliament-mansions, Victoria-street, S.W.	Oct. 6
Drainage and Purification Works	New Mills and Greenholm T.C.	Town Clerk, New Mills	do.
New Classrooms & Alters. to Schools, nr. Wakefield	West Riding Education Committee	County Architect, County Hall, Wakefield	Oct. 7
Steam Rolling	Wrotham U.D.C.	Council's Surveyor, Borough Green, Sevenoaks	do.
Supplying and Laying Cast-Iron Pipes, etc.....	Lanark C.C.	Warren Stuart, 94, Hope street, Glasgow	do.
Alterations & Additions to Junction Hotel, Bargoed	Rhondda Valley Breweries, Ltd. ..	Offices of Company, Pontypridd	Oct. 9
Alters. and Additions to Plasnewydd Hotel, Bargoed	do.	do.	do.
Installation of Electric Light at Council Offices	Prestwich U.D.C.	Council's Surveyor, Council Offices, Prestwich	do.
Sewerage and Sewage Disposal Works	Long Ashton R.D.C.	A. P. I. Cotterell, 28, Baldwin-street, Bristol.....	do.
Supply of Stoneware Drain Pipes for One Year	Croydon Borough Council	Borough Road Surveyor, Town Hall, Croydon	do.
Supply of Stores for One Year	do.	do.	do.
New Road at Cemetery, East Finchley.....	Islington Borough Council	Borough Engineer, Town Hall, Islington.....	do.
Sewerage Works, Waterloo, Hants	Catherington R.D.C.	G. C. Vernon-Inkpen, 40, Commercial-road, Portsmouth	do.
Addition to Administrative Block at Hospital	Barnes U.D.C.	Council's Engineer, High-street Mortlake, S.W.....	do.
*SUPPLY OF STORES FOR TWELVE MONTHS	Metropolitan Railway Co.	Secretary's Office, 32, Westbourne-terrace, W.	do.
New Schools, Northwich	Chester Education Committee	A. E. Powles, Architect, 7, Winnington-street, Northwich	Oct. 10
Making of New Streets etc., Northwich.....	do.	do.	do.
Rebuilding Perseverance Inn, Thornhill	Messrs. S. Webster & Sons, Ltd. ..	Jackson & Fox, 7, Rawson-street, Halifax	do.
Tar-paving Works	Southampton Corporation	Borough Engineer, Municipal Offices, Southampton	do.
Laying Sewers.....	do.	do.	do.
Roof Covering to Destructor Furnaces	do.	do.	do.
Making-up and Lighting Roads	Wealdstone U.D.C.	Council's Surveyor, Council Offices, Wealdstone.....	do.
Underground Conveniences	Swansea Corporation	Borough Surveyor, 13, Somerset-place, Swansea.....	do.
Laying Mains	Gosport Waterworks Co.....	Company's Engineer, 1, High-street, Gosport.....	do.
Supply of Timber	Great Western Railway Co.	Secretary, Paddington Station, W.	do.
Supply of Articles for Twelve Months	Aberdeen Harbour Commissioners	Harbour Engineer, Aberdeen	do.
Materials for Masons, Engineers, and Painters	Glamorgan County Asylum	Clerk of Asylum, Glamorgan	do.
*NEW SORTING OFFICE AT DULWICH	Commissioners of H.M. Works, etc.	J. Wager, H.M. Office of Works, Storey's-gate, S.W.	do.
*SUPPLY OF GRAVEL FOR PKS. & OPEN SPACES	London C.C.	Parks Department, 11, Regent-street, S.W.	Oct. 12
Drainage Works, Torrabridge	Tavistock R.D.C.	G. D. Bellamy, 6A, Courtenay-street, Plymouth	do.
Asphalt Paving	Islington Borough Council	Borough Engineer, Town Hall, Upper-street, N.	Oct. 12
Litho. Store, etc., Ordnance Survey, Southampton	Commissioners of H.M. Works, etc.	Director-General, Ordnance Survey, Southampton	do.
Supply of Desks for Schools	Lancashire Education Committee..	Director of Education, County Offices, Preston	Oct. 14
Steel Roof, etc., Boiler House, Rochdale-rd. Gasworks	Manchester Gas Committee	C. Nickson, Gas Department, Town Hall, Manchester	Oct. 16
Supply of Stores for Twelve Months	Great Western Railway	Stores Superintendent, Swindon.....	do.
Two Passenger Lifts on East and West Cliffs	Bournemouth Town Council	Borough Engineer, Municipal Offices, Bournemouth.....	do.
Borehole Pump for Waterworks.....	Horsforth U.D.C.	E. J. Silcock, 10, Park-row, Leeds.....	do.
Suction Gas-Producing Plant and Gas Engine.....	do.	do.	do.
*ERECTION OF CENTRAL FIRE STATION	Croydon Borough Council	Borough Engineer, Town Hall, Croydon	Oct. 17
*NEW POST-OFFICE, ENFIELD	Commissioners of H.M. Works, etc.	H.M. Office of Works, Storey's-gate, S.W.	Oct. 19
Supply of Road Materials	Carshalton U.D.C.	Council's Surveyor, High-street, Carshalton.....	do.
Erec. of Pub. Baths, Washhouses, Shepherd's Bush .	Hammersmith Borough Council....	L. Ernest Frank, A.R.I.B.A., 11, Pancras-lane, Queen-street, E.C.	do.
*WATER MAINS AND TOWER	Rye R.D.C.	Council's Surveyor, High-street, Rye	Oct. 19
*NEW POST-OFFICE, LEEDS	Commissioners of H.M. Works, etc.	H.M. Office of Works, Storey's Gate, S.W.	Oct. 20
Sewerage Works.....	Stratford-on-Avon R.D.C.	Wilcox & Raikes, 63, Temple-row, Birmingham	Oct. 21
*ALTRS & ADDS. TO MUNICIPAL SCH., BESWICK	Manchester Education Committee	Education Offices, Deansgate, Manchester	Oct. 27
*NEW POLICE OFFICES, ETC., LEWES.....	East Sussex C.C.	F. J. Wood, County Surveyor, Lewes	Oct. 30
Enlargement of Westhorpe School Buildings	East Suffolk Education Committee	G. W. Leighton, Architect, Princes-street Ipswich	No date
*ERECTION OF SECONDARY SCHOOL	Bucks Education Committee.....	Harrington, Ley, & Kelkhum, 65, Bishopsgate Without, E.C....	do.
*REPOINT. WALLS, ETC., AT HOSPITAL, NETLEY	War Department	War Office, Atterbury-street, Grosvenor-road, S.W.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*ARCHITECTURAL ASSISTANT.....	Hull Education Committee	100*l.*.....	Oct. 4
*OVERSEER (MAINTENANCE OF ROADS)	Hong Kong Public Works Dept. ..	210*l.*, etc.	Oct. 12
Highway Sur., San. Inspector, Inspec. of Nuisances	Claypole R.D.C.....	150*l.*.....	Oct. 14
Surveyor, Sanitary Inspector, and Collector of Rates	Wantage U.D.C.	130*l.*.....	Oct. 30

Those marked with an asterisk (*) are advertised in this number. *Competitions*, —. *Contracts*, iv. vi. viii. x. *Public Appointments*, xix.

PRICES CURRENT—*Continued from page 351.*

WOOD (*continued*).

JOINERS' WOOD (*continued*)—	At per standard. £ s. d.	£ s. d.
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	22 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 12 9	0 15 0
6 in. at 6d. to 9d. per square less than 7 in.		

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0 ...	7 0 0
Compound Girders, ordinary sections	7 15 0 ...	8 15 0
Steel Compound Stanchions	9 7 6 ...	10 17 6
Angles, Tees and Channels, ordinary sections	7 15 0 ...	8 15 0
Flitch Plates	8 0 0 ...	8 10 0
Cast Iron Columns and Stanchions including ordinary patterns	6 17 6 ...	8 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 10 0 ...	8 0 0
Staffordshire Crown Bars, good merchant quality	8 0 0 ...	8 10 0
Staffordshire "Marked Bars"	10 0 0 ...	—
Mild Steel Bars	8 10 0 ...	9 0 0
Hoop Iron, basis price	9 0 0 ...	9 5 0
" " Galvanized	16 15 0 ...	—
("And upwards, according to size and gauge.)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 5 0 ...	—
" " 24 g.	10 5 0 ...	—
" " 26 g.	12 0 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	13 0 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 10 0 ...	—
" " 26 g.	14 10 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	16 0 0 ...	—
" " 22 g. and 24 g.	16 10 0 ...	—
" " 26 g.	18 0 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	13 0 0 ...	—
" " 22 g. and 24 g.	13 10 0 ...	—
" " 26 g.	14 5 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 5 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 5 0 ...	—
" " " 26 g.	14 0 0 ...	—
Cut nails, 3 in. to 6 in.	9 5 0 ...	9 15 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	16 15 0 ...	—
Pipe in coils	17 5 0 ...	—
Soil pipe	19 15 0 ...	—
Compo pipe	19 15 0 ...	—
ZINC—Sheet—		
Vieille Montagne ton	30 5 0 ...	—
Silesian	30 0 0 ...	—
COPPER—		
Strong Sheet per lb.	0 0 11 ...	—
Thin "	0 1 0 ...	—
Copper nails "	0 0 11 ...	—
BRASS—		
Strong Sheet "	0 0 10 ...	—
Thin "	0 0 11 ...	—
TIN—English Ingots "	0 1 5½ ...	—
SOLDER—Plumbers' "	0 0 7 ...	—
Tinmen's "	0 0 8¼ ...	—
Blowpipe "	0 0 6½ ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
" fourths	2d. " "
21 oz. thirds	3¾d. " "
" fourths	3d. " "
26 oz. thirds	4¾d. " "
" fourths	3¾d. " "
32 oz. thirds	5¾d. " "
" fourths	5d. " "
Fluted Sheet, 15 oz.	3¾d. " "
" 21 oz.	4¾d. " "
Hartley's Rolled Plate	2d. " "
" " "	2¾d. " "
" " "	3¾d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 6
" " in barrels	"	0 1 7
Boiled " in drums	"	0 1 9
" " in pipes	"	0 1 8
" " in barrels	"	0 1 9
" " in drums	"	0 1 11
Turpentine, in barrels	"	0 4 0
" in drums	"	0 4 2
Genuine Ground English White Lead	per ton	19 15 0
Red Lead, Dry	"	19 5 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 a.m. on *Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERDARE.—For the erection of additional class-rooms, new cloak-rooms, etc., and for alterations to Capcoch mixed schools, for the Education Committee. Messrs. J. Llewellin, Smith, & Davies, architects, 7, Victoria-square, Aberdare:—

A. J. Colborne, Swindon*	£1,490 16

AYLESBURY.—For erection of Council School in three departments, with outbuildings, boundary walls, etc., also a cookery school, for the Bucks County Education Committee. Messrs. John Moir Kennard & Harold Kennard, architects, 13, Railway-approach, London Bridge, S.E. Quantities by Messrs. W. T. Farthing & Son, 46, Strand, London, W.C.:—

R. Cleaver	£11,737 0 0
C. W. Cox & Son	10,877 12 0
J. R. Johnson & Son	10,870 0 0
Oak Building Co., Ltd.	10,868 0 0
J. Barker & Co., Ltd.	10,787 0 0
S. E. Moss & Co.	10,764 0 0
Benfield & Loxley	10,729 0 0
G. & D. Cannon	10,678 0 0
J. Appleby & Sons	10,660 0 0
D. G. Minter	10,533 0 0
S. Orchard & Son	10,500 0 0
Martin, Wells, & Co., Ltd.	10,470 0 0
W. T. Bloxham	10,308 0 0
Mayne & Son	10,200 0 0
J. Parren & Son	10,104 10 0
H. D. Bowyer	10,100 0 0
T. Stimson & Son	10,047 9 7
R. Elvy	10,047 0 0
W. Lawrence & Son	9,940 0 0
G. Henson & Son	9,925 0 0
J. Mead	9,874 0 0
C. H. Hunt	9,767 0 0
G. Darlington	9,749 0 0
Webster & Cannon	9,698 0 0
W. Coran & Son	9,660 0 0
Kettering Co-operative Builders' Ltd.	9,603 0 0
G. H. Gibson	9,484 0 0
G. J. Fisher	9,300 0 0
S. L. Grist, Enfield†	9,200 0 0
R. Jewell & Co.‡	7,585 9 0

[‡ Withdrawn.]

CRICKLEWOOD.—For the erection of new sorting-office, for H.M. Office of Works:—

J. Allen & Sons, Ltd.	£2,745 0	Edward & Medway	£2,330 0
C. Ansell	2,662 0	Aldridge & Son.	2,300 0
J. T. Robey	2,577 0	G. Wiggs	2,300 0
E. Laurance & Sons	2,397 0	Galbraith Bros.	2,243 0
R. Dean & Co.	2,364 10	R. Elvy	2,215 0
Martin, Wells, & Co., Ltd.	2,340 0	Pollard & Brand	2,200 0
Speechley & Smith	2,330 0	Gathercole Bros.	2,200 0
		B. E. Nightingale	2,190 0

CHISWICK.—For extension of press house, and erection of new lime store, sludge pit, etc., at the Sewage Disposal Works, for the Urban District Council of Chiswick:—

Aldridge & Son	£1,357 0 0	Martin, Wells, & Co., Ltd.	£1,095 0 0
T. W. Pedrette	1,344 0 0	S. W. Scole & Son	1,047 0 0
W. H. Hyde	1,188 0 0	F. W. Harris & Co.	990 0 0
J. Guttridge	1,179 0 0	Plumridge & Swaker	982 19 0
R. Myerscough	1,164 7 9	T. Bendon	971 0 0
T. Almond & Sons, Ltd.	1,150 0 0	J. Christie	943 0 0
Bailey & Fry	1,112 0 0	E. Wall	930 0 0
Chambers	1,096 0 0		

CROYDON.—For the erection of four shops, etc., for Mr. E. Clare. Mr. S. C. Hart, architect, 22, Philpot-lane, London, E.C.:—

Cordell & Sons	£2,777	C. H. Wallis & Co.	£1,950
H. E. Buckingham, Ltd.	2,100	W. Brooks & Co.	1,745
Hall & Jacobs	2,035	G. Buxton	1,470
W. Roberts	2,000	M. Wallis	1,467

HARROW-ON-THE-HILL.—For making up Park-road, for the trustees of the late Mr. David Brown. Messrs. Cowell & Shaw, surveyors, 49, Finsbury-pavement, E.C.:—

J. & W. Drake	£1,058 0 0	J. Shelbourne & Co.	£485 0 0
S. Kavanagh	693 0 0	Collins & Charles	477 0 0
T. Adams	649 0 0	A. B. Champnies	472 0 0
C. W. Killingback & Co.	619 0 0	W. & C. French	458 0 0
Stone, Farley, & Co.	600 17 10	S. Gibbons	448 16 0
W. Y. Green & Co.	564 0 0	T. Free & Sons, Maidenhead*	436 17 8
A. Catley	500 0 0	Hanson & Waterhouse	421 0 0
C. Trueman	500 0 0		
G. Wimpey & Co.	491 0 0		
J. Jackson‡	489 18 3		
A. F. Lee	488 0 0		

[‡ Received too late.]

HERNE HILL.—For kerbing, channelling, etc., for the Camberwell Borough Council. Mr. W. Oxtoby, A.M.Inst.C.E., Engineer and Surveyor, Town Hall, Peckham-road, S.E.:—

A. Waller & Son	£2,106 14 3	Hanson & Waterhouse	£1,483 4 3
J. & W. Drake	2,082 0 2	J. Mowlem, Ltd.	1,381 15 6
W. Moon	1,828 14 2	J. J. Anderson	1,364 9 0
T. Adams	1,820 8 10	E. Iles	1,348 9 9
W. H. Wheeler	1,693 12 6	J. E. Etheridge	1,314 17 6
H. Woodham & Sons	1,654 1 4	A. C. Soan	1,292 7 2
J. Shelbourne & Co.	1,577 13 9	W. Pearce, Forest Hill, S.E.†	1,262 10 3
Fry Bros.	1,564 13 2		
H. Prentis	1,492 2 2		

HERTFORD.—For making and sewering new roads adjoining Ware-road, for Messrs. T. C. Usher and C. T. Barclay. Messrs. Norris & Duvall, surveyors, 60, Fore-street, Hertford:—

Hewett & Sons, Ltd.	£1,705 6 7	G. F. Tomlinson	£1,385 13 3
S. Kavanagh & Co.	1,549 18 6	Wallace & Inns	1,380 0 0
E. Bloomfield	1,535 6 11	W. Gray	1,336 6 11
W. Griffiths & Co., Ltd.	1,532 16 3	A. T. Catley	1,330 0 0
R. M. Parkinson	1,517 10 7	J. C. Trueman	1,316 0 0
T. Free & Sons	1,467 15 11	G. Bell	1,296 18 2
E. Frost	1,457 10 7	C. W. Killingback & Co.	1,270 18 11
Skins & Co., Ltd.	1,447 0 0	Grounds & Newton	1,241 16 2
J. Jackson	1,408 14 6	C. & W. French	1,162 18 0
M. S. Kitteringham	1,400 16 3		

HIGHGATE.—Proposed new road from Hornsey-lane to Whitehall Park.

—	Complete with York Stone. £ s. d.	Allowance for Harberton. £ s. d.	Net Amount for York Paving. £ s. d.
Castle & Co.	2,653 0 0	—	2,653 0 0
W. Manders	2,585 0 0	—	2,585 0 0
Wilkinson Bros.	2,414 0 0	30 0 0	2,384 0 0
T. Free & Sons	2,427 13 8	100 0 0	2,327 13 8
W. Neave & Son	2,242 0 0	50 0 0	2,192 0 0
F. J. Coxhead	2,198 0 0	30 0 0	2,168 0 0
T. Turner	2,204 11 6	50 0 0	2,154 11 6
E. Iles, sen.	2,230 0 0	95 0 0	2,135 0 0
R. Ballard, Ltd.	2,167 0 0	50 0 0	2,117 0 0
J. Shelbourne & Co.	2,225 0 0	125 0 0	2,100 0 0
Cunningham, Forbes, & Co.	2,084 0 0	—	2,084 0 0
Parry & Co.	2,100 0 0	40 0 0	2,060 0 0
E. T. Bloomfield	2,080 0 0	35 0 0	2,045 0 0
F. Hoffmann	2,140 12 0	130 0 0	2,010 12 0
Wilson, Border, & Co.	2,041 0 0	40 0 0	2,001 0 0
T. Adams	2,082 0 0	100 0 0	1,982 0 0
J. G. Porter	1,979 0 0	—	1,979 0 0
G. Bell	2,026 0 0	50 0 0	1,976 0 0
G. R. Mann	1,969 4 7	15 0 0	1,948 4 7
J. Jackson	1,985 4 4	50 0 0	1,935 4 4
Harvey Bros‡	1,897 16 0	—	—
Killingback & Co.	1,997 0 0	100 0 0	1,897 0 0
W. Taylor	1,997 0 0	200 0 0	1,797 0 0
W. French & Co.	1,825 0 0	85 0 0	1,740 0 0
Stone, Farley, & Co.	1,784 6 9	50 0 0	1,734 6 9
W. H. Wheeler	1,812 0 0	80 0 0	1,732 0 0
Fleming & Co.	1,793 0 0	70 0 0	1,723 0 0
T. Watson, Jun.	1,733 14 4	33 14 4	1,700 0 0
J. C. Trueman, Swanley, Kent*	1,785 0 0	125 0 0	1,660 0 0

[‡ For artificial stone paving.]

HENGOED.—For erecting a house, for Mrs. Perrott. Mr. P. V. Jones, architect and surveyor, Hengoed :—

Francis & Davies....	£892	0	0	Vodden & Son	£730	0	0
T. James & Son	775	0	0	M. Gibbon & Son, Cardiff*	695	10	8

HIGH WYCOMBE.—For the erection of a girls' secondary school. Mr. A. Greenwood, architect, Merchant-buildings, Market-street, Manchester :—

J. Stevens & Son	£4,218	0	G. Biggs & Sons	£3,555	0
J. Barker & Co.	3,973	0	H. Harris	3,475	0
W. J. Bloxham	3,940	0	A. J. Colborne..	3,399	5
H. D. Bowyer..	3,705	0	G. Hesson & Son	3,328	0
J. Christie	3,690	0	Kettering Co-operative Builders	3,298	16
East & Hyde ..	3,655	0	G. H. Gibson ..	3,284	0
Y. J. Lovell....	3,630	0	J. T. Harris, High Wycombe*	3,229	0
W. T. Toogood & Co.	3,594	0	Enness Bros. ..	3,177	0
G. Darlington..	3,590	0			
C. H. Hunt & Son	3,573	0			

ILFORD.—For street works, Wingate, Khartoum, and Uphall roads, for the Urban District Council. Mr. H. Shaw, Engineer and Surveyor, Town Hall, Ilford :—

Parsons & Parsons, Ilford Wharf* £1,802 17 6

IPSWICH.—For erecting the first section of new quarters for nurses at the Borough Fever Hospital, Foxhall-road, for the Corporation. Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich :—

R. Girling	£1,695	G. Grimwood & Sons	£1,583
W. Grayston.....	1,677	S. Skerritt.....	1,560
H. J. Linzell.....	1,649	J. C. Smith	1,450
C. Borrett.....	1,597	S. A. Kenney, Burrell-street, Ipswich*	1,375
C. A. Green	1,593		
W. H. Death	1,589		

IPSWICH.—For the erection of Clifford-road Council School, for the Education Committee. Mr. E. T. Johns, architects, Thoroughfare, Ipswich. Quantities by Messrs. Eade & Johns :—

T. James & A. Gower.....	£15,273 0 0
C. A. Green	13,500 0 0
Oak Building Co., Ltd.	13,400 0 0
A. Sadler	13,255 0 0
G. Grimwood & Sons.....	13,218 0 0
T. H. Blyth.....	13,085 9 6
T. Parkinson & Son	13,000 0 0
R. Girling.....	12,979 0 0
J. McKay.....	12,608 0 0
H. J. Linzell	12,558 0 0
E. Catchpole & Sons, Ltd.	12,462 0 0
Spencer, Santo, & Co.	12,100 0 0
F. C. Thurman.....	11,999 19 9
A. G. Beckett	11,950 0 0
S. A. Kenney, Ipswich*	11,675 0 0
Clark & Sons.....	11,600 0 0
W. H. Maxey & Son	11,443 0 0
W. Manders	11,431 14 1

KENILWORTH.—For the erection and completion of a new reformatory school for girls, lodge, laundry, etc., for the Committee of the Warwickshire Reformatory Institutions. Mr. C. M. C. Armstrong, architect, 5, High-street, Warwick :—

J. H. Cashmore & Sons	£6,130 0 0
E. Smith & Son	5,999 0 0
R. Bowen.....	5,600 0 0
F. Davis	5,550 0 0
T. Broad, Ltd.	5,391 0 0
Parnell & Son	5,374 7 0
J. Barnsley & Sons.....	5,348 0 0
W. J. Whittall & Son.....	5,269 0 0
G. F. Smith & Sons	5,261 0 0
Kelly & Son.....	5,060 15 11
C. Hope, Berkswell*	4,942 0 0

KING'S NORTON.—For erecting a public library, for King's Norton and Northfield Urban District Council. Mr. A. W. Cross, engineer, 23, Valentine-road, King's Heath :—

W. Jackson, Barr-street, Langley, Staffs. £950 11 7

LEYTON.—For making-up and paving certain private streets, for the Urban District Council. Mr. W. Dawson, Council's Surveyor, Town Hall, Leyton, E. :—

Hewitt & Sons.	£422 2 6	O. T. Gibbons .	£353 3 9
J. Jackson	409 12 0	W. Frost	334 18 9
Griffiths & Co., Ltd.....	396 11 5	W. Manders, Leyton*	273 18 7
G. J. Anderson	355 13 2		

LLANDUDNO.—For road and footpath construction, drainage, fencing, etc., Gloddaeth-street, for the Urban District Council. Mr. E. P. Stephenson, Engineer and Surveyor, Town Hall, Llandudno. Quantities by Mr. Stephenson :—

W. Davies, Llandudno £3,144 13

LONDON.—For erecting a small relief station, etc., at Oakfield-road, Anerley, for the Croydon Guardians. Mr. H. Berney, architect, 104, George-street, Croydon :—

F. Jacobs, Avenue-road, Beckenham.... £944

LONDON.—For constructing cloakrooms and lavatories in connexion with the Public Hall at Prince of Wales-road Baths, Kentish Town, for St. Pancras Borough Council. Mr. T. W. Aldwinckle, architect, 20, Denman-street, London Bridge, S.E. :—

C. E. Gibbings & Co.....	£383 8	W. Reason	£327 0
Aldridge & Son ..	370 0	J. Barker & Co., Ltd., Kensington High-street, W.*	317 0
C. Wall, Ltd.	359 0		
W. Lawrence & Son	354 0		

MIDDLESEX.—For additions, including library and billiard-room, at Bedfont House, for Mr. D. H. Khiner-Waring. E. J. Paine, architect, 11, St. James-street, W.C. :—

T. C. Watson, Feltham* £1,850

RODBOURNE CHENEY (Wilts).—For erecting a Primitive Methodist church. Mr. W. R. Osborne, architect and surveyor, Regent-circus, Swindon. Quantities by architect :—

W. Jones	£795 0	A. J. Colborne ..	£198 10
G. J. Norman ..	760 0	A. J. Colborne, Swindon*	540 0
H. Flewelling....	723 0		
R. J. Leighfield..	668 0		

NEWCASTLE-ON-TYNE.—For alterations, etc., to kitchen, etc., at the City Lunatic Asylum, for the Lunatic Asylum Visiting Committee. Mr. F. H. Holford, City Architect. Quantities by Mr. J. Savage, quantity surveyor, 1, Mosley-street, Newcastle-upon-Tyne :—

General Building Work.

S. Fenwick & Co.	£4,037 4 5	S. F. Davidson	£3,295 0 0
J. Nicholson.	3,701 10 0	R. Veitch & Sons.....	3,293 9 1
Middlemiss Bros.	3,688 18 7	J. Oliver & Sons.....	3,270 0 0
J. Craven ..	3,518 18 0	W. C. Fleck..	3,233 14 0
Franklin & Son, Ltd...	3,400 0 0	Elliott Bros. .	3,227 7 9
S. Bay.....	3,389 0 5	G. H. Mauchlen	3,142 10 6
W. Jackson..	3,385 0 5	J. C. Hope ..	3,115 15 1
W. Worley, jun.	3,358 3 0	E. T. George.	3,000 0 0
		W. Nicholson	2,900 14 9

Cooking Apparatus.

J. Slater & Co..	£1,163 2	Ashwell & Nesbit, Ltd..	£745 10
Benham & Sons	1,135 0	Barford, Perkins, & Co.	745 0
J. Simpson & Co.	1,016 0	T. Bradford & Co.	659 0
W. Summerscales & Sons, Ltd	966 10		
H. Walker & Sons	874 10		

SOUTHEND-ON-SEA.—For sewering part of Shakespeare-drive, for the Corporation. Mr. E. J. Elford, Borough Engineer, Southend :—

S. Kind.....	£284 16 0	W. Iles	£189 0 0
Brice & Sons .	273 15 10	Buxton & Jenner, Southend-on-Sea*	177 14 9
W. Parsons ..	251 7 5		
T. W. Marsh	234 13 2		
J. May	233 7 4		
J. C. Trueman	199 0 0		

SOUTHEND-ON-SEA. — For sewering parts of Gainsborough Drive, for the Corporation. Mr. E. J. Elford, Borough Surveyor, Southend-on-Sea :—

S. Kind.....	£339 6 8	J. Trueman ..	£244 0 0
S. J. Brice & Sons	310 5 7	W. Iles	210 0 0
W. Parsons ..	209 5 6	Buxton & Jenner, Southend-on-Sea* .	205 10 11
T. W. Marsh .	209 19 10		
J. May	208 13 2		

STIRCHLEY.—For erecting a bridge over the Bournville stream at the bottom of Umberslade-road in Hennebique's ferro-concrete, for the King's Norton and Northfield Urban District Council. Mr. A. W. Cross, engineer, 23, Valentine-road, King's Heath :—

Yorkshire Hennebique Contracting Co., Ltd., East-parade, Leeds £385

WOOD GREEN.—For alterations and additions to the Alexandra Park Tavern, High-road. Messrs. Warran & Stupart, architects and surveyors, 78, Grand-parade, Harringay, N. :—

H. Knight & Son..	£1,823	Oliver & Co.....	£1,593
A. Porter	1,695	Swire & Co.	1,575
Green & Smith....	1,597	C. Hale & Co.‡....	1,425

[‡ Accepted subject to modification.]

WOOTTON BASSETT (Wilts).—For alterations and additions to buildings and residence at Nore Marsh, for Mr. W. Gough. Mr. W. R. Osborne, architect and surveyor, Regent-circus, Swindon, Wilts :—

H. Chequer.....	£460 0	J. Pointing.....	£374 0
H. Flewelling....	432 0	Twine Bros., Wootton Bassett*	353 18
J. Williams.....	375 0		

WREXHAM.—For erecting a public library, for the Town Council. Mr. Vernon Hodge, architect, 13, Grand-parade, Teddington, Middlesex :—

		Less allowance for old materials of cottages to be pulled down.
T. G. Huxley	£5,195 0 0	.... £220
J. B. Woolley	4,500 0 0	 40
Lewis Bros.	4,315 0 0	 75
T. H. Davis.....	4,275 0 0	 39
F. Matthews.....	4,184 0 0	 50
Dryland & Preston ..	4,050 0 0	 20
Davies Bros.	3,924 12 2	 20
T. Jones	3,847 0 0	 52
Hughes & Stirling ..	3,677 0 0	 50
R. Rowley	3,504 0 0	 200

W. H. Lascelles & Co.

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